# INITIAL ENVIRONMENTAL EXAMINATION

## PROJECT/ACTIVITY DATA

<table>
<thead>
<tr>
<th>Project/Activity Name:</th>
<th>Zambia Integrated Health Portfolio: I.R. 3.2 Health Status Improved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geographic Location(s) (Country/Region):</td>
<td>Zambia/Southern Africa</td>
</tr>
<tr>
<td>Amendment</td>
<td>No</td>
</tr>
<tr>
<td>Implementation Start/End Dates (FY or M/D/Y):</td>
<td>FY 2019 – FY 2024</td>
</tr>
<tr>
<td>Solicitation/Contract/Award Number:</td>
<td>Multiple</td>
</tr>
<tr>
<td>Implementing Partner(s):</td>
<td>Multiple</td>
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## ORGANIZATIONAL/ADMINISTRATIVE DATA

<table>
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<tr>
<th>Implementing Operating Unit(s): (e.g. Mission or Bureau or Office)</th>
<th>USAID/Zambia</th>
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<tr>
<td>Other Affected Operating Unit(s):</td>
<td>Global Health Bureau Field Support</td>
</tr>
<tr>
<td>Lead BEO Bureau:</td>
<td>Africa, Brian Hirsch, BEO</td>
</tr>
<tr>
<td>Funding Operating Unit(s): (e.g. Mission or Bureau or Office)</td>
<td>USAID/Zambia</td>
</tr>
<tr>
<td>Funding Account(s) (if available):</td>
<td></td>
</tr>
<tr>
<td>Original Funding Amount:</td>
<td>$1,463,277,115</td>
</tr>
</tbody>
</table>

If Amended, specify funding amount:

If Amended, specify new funding total:

Prepared by: Jessica Lin - Field Support Assistant, Patricia Chisenga - Project Management Specialist, Chipo Tembo – Project Management Assistant, Mwewa Katongo - Mission Environmental Officer

Date Prepared: April 27, 2018

## ENVIRONMENTAL COMPLIANCE REVIEW DATA

<table>
<thead>
<tr>
<th>Analysis Type:</th>
<th>X Environmental Examination • Deferral</th>
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<tr>
<td>Environmental Determination(s):</td>
<td>X Categorical Exclusion(s) X Negative • Deferred (per 22CFR216.3(a)(7)(iv)</td>
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IEE Expiration Date (if different from implementation end date): September 30, 2024

Additional Analyses/Reporting Required: CRM, Section Table
EMMPs, ERRs by IPs

Climate Risks Identified (#): Low ___5___ Moderate ___16__ High ______

Climate Risks Addressed (#): Low _____ Moderate __12___ High ______

**THRESHOLD DETERMINATION AND SUMMARY OF FINDINGS**

**PURPOSE AND SCOPE OF THE INITIAL ENVIRONMENTAL EXAMINATION**

The purpose of this IEE, in accordance with 22 CFR 216, is to provide the first review of the reasonably foreseeable effects on the environment, as well as to provide determinations for all activities under the USAID/Zambia Health portfolio, Development Objective 3: Health Status Improved. This five-year IEE sets out to ensure that all current and proposed activities comply with USAID’s environmental regulations.

**PROJECT/ACTIVITY SUMMARY**

This IEE is based on the USAID/Zambia Country Development Cooperation Strategy (CDCS) that will be valid until December 2019 and the FY 2014-2019 Health Project Appraisal Document (PAD). The Health PAD will be amended once the USAID/Zambia CDCS is approved. The Health portfolio is not anticipated to change substantially after 2019 but for the HIV and Malaria programs adapting to meet the needs of Zambia post HIV epidemic control and malaria elimination, which is anticipated in the next several years. In addition, the Health office will increase local partnerships in support of Zambia’s journey to self-reliance.

The long-term development of Zambia depends on a healthy and productive population. Without significant improvement in health, Zambia cannot achieve its goal of inclusive prosperity by 2030. This project, IR 3.2 Health Status Improved, is premised upon the hypothesis that improved health service delivery, combined with stronger institutions that are more accountable and an increased practice of healthy community behaviors and healthy lifestyles, will improve the health status of Zambians. To meet its goal, the project must achieve the following three intermediate results:

- Sub-IR 3.2.1 – Health Service Delivery Improved
- Sub-IR 3.2.2 – Health Systems and Accountability Strengthened
- Sub-IR 3.2.3 – Community Health Practices Improved

This project addresses some of the prominent health challenges in Zambia through the integration of activities attributed to numerous USG health initiatives and endeavors, including USAID Forward, the Global Health Initiative (GHI), the President’s Malaria Initiative (PMI), Feed the Future (FTF), the President’s Emergency Plan for Aids Relief (PEPFAR), Saving Mothers, Giving Life (SMGL), and Helping Babies Breathe (HBB). Given the various and interlinked health challenges in Zambia, the project assumes that the combined and coordinated work of these activities will contribute to sustained improvements in the health of Zambia’s population.

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1 Numbering of intermediate results and outcomes builds upon the CDCS. The project goal is CDCS IR 3.2. Thus, project IR’s become CDCS Sub-IRs and are numbered accordingly.

Current and anticipated activities in the USAID/Zambia IR 3.2 Health Status improved project are listed in Table I below.

ENVIRONMENTAL DETERMINATIONS

A Categorical Exclusion is recommended for the following classes of activities, as per CFR 216.2(c)(2)(i) education, technical assistance, or training programs except to the extent such programs include activities directly affecting the environment (such as construction of facilities, etc.); (v) document and information transfers; (viii) programs involving nutrition, health care, or family planning services except to the extent designed to include activities directly affecting the environment (such as construction of facilities, water supply systems, wastewater treatment, etc.); (xiv) studies, projects or programs intended to develop the capability of recipient countries to engage in development planning; and (xv) activities which involve the application of design criteria or standards developed and approved by USAID.

The health office activities with categorical exclusion determination include:

• Capacity building to communities and MOH for improved community- and facility-based health services through training, technical assistance in clinical diagnosis, treatment, and service delivery, as well as the institutionalization of feedback and reporting systems to ensure accurate reporting of services and commodities as well as quality of care;
• Community engagement to increase demand for quality services and promotion of healthy behaviors;
• Technical assistance for Health Systems Strengthening through, institutionalized quality assurance and quality improvement initiatives for improved healthcare, strengthened human resources for health management at all levels, strengthened data quality, and increased financial sustainability of services including but not limited through introduction of innovative health financing models;
• Monitoring, Learning, Assessment, and Evaluation Activities.

There are qualifiers associated with these categorical exclusions, e.g., if any topic associated with these activities is one that inherently affects the environment, such as training (see below for more information on training that falls under the negative determination with conditions).

While a Negative Determination with Conditions is recommended for the following illustrative activity classes in the USAID/Zambia health portfolio:

• Some activities (sub elements) of the Family Planning/ Reproductive Health and Maternal, Newborn, Child, and Adolescent Health and Nutrition (RMNCAH/N) Technical Assistance.
• HIV/AIDS, malaria, TB, and other diagnostic testing: These activities entail the use, storage, transportation and disposal of blood and/or the generation of medical waste (e.g., used syringes) for diagnostics. These activities present the potential for disease transmission from the generation, management and disposal of blood (including blood products) and medical waste, and require appropriate mitigation measures and conditions.
• Treatment of malaria, HIV/AIDS, TB, and other illnesses or health complications during delivery: Activities such as direct clinical or treatment services have the potential for generation and disposal of medical waste. It is required that best practice approaches be adopted to ensure that adequate application of medical waste management and disposal procedures are exercised. Management of expired medicines or commodities, and outdated equipment: Activities to support the Government of Zambia with the proper disposal of expired commodities or equipment, particularly those that are procured with USAID resources, are critical.
• HIV/AIDS testing or training related to malaria prevention that involves use and disposal of medical waste, then such training will include information on how to minimize and/or mitigate
these impacts. Examples include, instruction on safe disposal of sharps and biological samples generated from HIV/AIDS testing or training in proper household behaviors to minimize exposure during indoor residual spraying campaigns and proper use of insecticide-treated materials like bed nets. Likewise, demand creation efforts for VCT, etc., have downstream implications on health care waste management capacity.

- Small-scale water supply and sanitation activities
- Solar energy and construction
- USAID Health Integrated Infrastructure Design Activity is a new activity that involves the construction/renovation of the Neonatal Intensive Care Unit at the Women and Newborn Hospital in Lusaka. This activity incorporates Architectural and Engineering services for the initial assessment, planning and design of the NICU and the actual construction/renovation. The activity is not expected to be more than 1000m² in size and is unlikely to cause significant adverse environmental impacts. An EMMP will be developed and measures of mitigation will be in place.

Positive determination is recommended for the following classes of actions have been determined generally to have a significant effect on the environment and an Environmental Assessment or Environmental Impact Statement, as appropriate, will be required:

(i) Programs of river basin development;
(ii) Irrigation or water management projects, including dams and impoundments;
(iii) Agricultural land leveling; (iv) Drainage projects; (v) Large scale agricultural mechanization;
(vi) New lands development; (vii) Resettlement projects;
(viii) Penetration road building or road improvement projects;
(ix) Power plants; (x) Industrial plants;
(xi) Potable water and sewerage projects other than those that are small-scale.

An Initial Environmental Examination normally will not be necessary for activities within the classes described in §216.2(d), except when the originator of the project believes that the project will not have a significant effect on the environment. In such cases, the activity may be subjected to the procedures set forth in §216.3. (e) Pesticides. The exemptions of §216.2(b) (l) and the categorical exclusions of §216.2(c) (2) are not applicable to assistance for the procurement or use of pesticides.

The Health office has no activities that could potentially rise to positive determination and significantly affect the environment. However, to mitigate any potential environmental impact of these activities, beyond regular monitoring visits to activity sites, the Health Team, in particular, COR and AORs for individual activities will work with implementing partners to assure, to the extent possible, that relevant medical facilities and operations have adequate procedures and capacities in place to properly handle, label, treat, store transport and properly dispose of blood, sharps, and other medical waste as articulated in Chapter 8 of the Environmental Guidelines for Small Scale Activities in Africa’s ‘Minimum Elements of a Complete Waste Management Program and USAID Sector Environmental Guidelines – Healthcare Waste’. Upon approval of this document, the determinations become affirmed, per Agency regulations (22 CFR 216).

CONSTRUCTION ACTIVITIES

All construction activities will be conducted in an environmentally friendly manner consistent with: the SEG Small-Scale Construction (found at: http://www.usaidgems.org/Documents/SectorGuidelines/SectorEnvironmentalGuidelines_Construction_2014.pdf), USAID Environmental Procedures and host country requirements.

Small-scale construction refers to any individual building that does not exceed 10,000 square feet (1000m2) of construction and less than $200 000 total cost. Projects of this size and cost are unlikely to cause significant adverse environmental impacts. Construction up to several times larger than this “rule of thumb” may still be small-scale, but significant adverse impacts become more likely and require more rigorous consideration and mitigation. USAID constructed facilities, structures, and infrastructure must be designed and constructed to appropriate engineering standards to minimize risk to humans and the natural environment. Burnt bricks contribute to deforestation and any construction should use alternatives such as compressed soil brick and stabilized soil blocks that require very little or no energy to manufacture.

The current health office construction activities do not exceed 10,000 square feet (1000m2) and are not constructed on a new site but within the grounds of existing health facilities. As a result, these types of construction are determined as negative with conditions. However, if the square footage exceeds what is outlined and the determination is positive, more rigorous monitoring and mitigation measures should be put in place.

The table below summarizes the environmental determinations applicable to the specific projects/activities:

<table>
<thead>
<tr>
<th>Activity- Sub-IR</th>
<th>Categorical Exclusion</th>
<th>Negative Determination</th>
<th>Positive Determination</th>
</tr>
</thead>
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<tr>
<td>Sub-IR 3.2.1 Health Service Delivery Improved</td>
<td>✓</td>
<td>✓</td>
<td>✓ (w/conditions)</td>
</tr>
<tr>
<td>Sub-IR 3.2.3 Care and support at the community</td>
<td>✓</td>
<td>✓</td>
<td>✓ (w/conditions)</td>
</tr>
<tr>
<td>Sub-IR 3.2.2 Health Systems and Accountability Strengthened</td>
<td>✓</td>
<td>✓</td>
<td>✓ (w/conditions)</td>
</tr>
</tbody>
</table>

### CLIMATE RISK MANAGEMENT

The Climate Risk Management screening results indicated a MODERATE risk to construction and solar as well as commodities and logistics activities. This MODERATE risk will be addressed by RFAs/RFPs developed for individual activities that require implementing partners to address specific climate change risks as part of environmental mitigation and monitoring plan development. Additionally, construction and solar projects are required to practice climate-smart architecture including siting and climate-smart building design and use of materials. A LOW to MODERATE risk is indicated for activities pertaining to HIV/AIDS and tuberculosis and malaria. Increased temperatures, changing precipitation patterns, and increased risk of flooding may increase air and water-borne diseases and vector-borne diseases, which

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4 Refer to Section 5 and Table 4 for Conditions and Mitigation Measures; and to Annex 2 for an illustration of current and anticipated mechanisms.
may strain health system resources. These activities are required to integrate climate risk management into their respective Environmental Mitigation and Monitoring Plans (EMMP). In addition, the project should consider integrating weather and climate data into health data systems in 3.2.2 in order to increase available data on changing patterns of climate-sensitive diseases, particularly malaria. LOW risks were identified for the remaining activities of family planning/reproductive, maternal, newborn, child, and adolescent health and nutrition; health systems strengthening; and monitoring and evaluation. These activities will not require climate risk to be addressed in EMMPs but USAID and Implementing Partners (IPs) will continue to collaborate with the Government of the Republic of Zambia (GRZ) to strengthen climate resilience through planning for extreme weather events, data collection, and behavior change communication.

BE0 SPECIFIED CONDITIONS OF APPROVAL
None.

IMPLEMENTATION
In accordance with 22 CFR 216 and Agency policy, the conditions and requirements of this document become mandatory upon approval. This includes the relevant limitations, conditions and requirements in this document as stated in Sections 3, 4, and 5 of the IEE and any BE0 Specified Conditions of Approval.
USAID APPROVAL OF INITIAL ENVIRONMENTAL EXAMINATION

PROJECT/ACTIVITY NAME: Integrated Health Portfolio: IR 3.2 Health Status Improved

Bureau Tracking ID: ____________

Approval: ____________________________ 1/23/18
Patrick Diskin, Mission Director

Concurrence: ____________________________ 1/25/2019
Brian Hirsch, Bureau Environmental Officer

Clearance: ____________________________ 11/21/18
Melanie Luick-Martins, Health Office Director

Clearance: ____________________________ 12/13/18
Mark Hyland, Regional Legal Officer

Clearance: ____________________________ 11/27/18
Zdenek Suda, Supervisory Program Officer

Clearance: ____________________________ 11/29/18
Mohib Ahmed, Office of Acquisition and Assistance Director

Clearance: ____________________________ 12/23/2018
Cleared
Judith Muhomba, Acting Regional Environmental Officer

Clearance: ____________________________ 01/25/2019
Tegan Blaine by email, with comments

Clearance: ____________________________
Roopa Karia, Agency Climate Integration Lead
INITIAL ENVIRONMENTAL EXAMINATION


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1.0  PROJECT DESCRIPTION

1.1  PURPOSE AND SCOPE OF IEE

The purpose of this document, in accordance with Title 22, Code of Federal Regulations, Part 216 (22CFR216), is to provide a preliminary review of the reasonably foreseeable effects on the environment of the USAID intervention described herein and recommend determinations and, as appropriate, conditions, for Intermediate Result 3.2: Health Status Improved. Upon approval, these determinations become affirmed, per 22CFR216 and specified conditions become mandatory obligations of implementation. This IEE also documents the results of the project/activity level Climate Risk Management process in accordance with USAID policy (specifically, ADS 201 mal).

This IEE is a critical element of USAID’s mandatory environmental review and compliance process meant to achieve environmentally sound activity design and implementation. Potential environmental impacts should be addressed through formal environmental mitigation and monitoring plans (EMMPs) and/or Environmental Assessments (EAs), if needed.

1.2  PROJECT OVERVIEW

Health Status Improved, in the CDCS IR 3.2, is the goal of this project and contributes to Development Objective (DO) 3 as articulated in the CDCS hypothesis: health status is a strong determinant of human development, and is directly linked to the productive and income-generating capacity of Zambians. Through its impact on education and economic growth, improved health helps catalyze transitions to democracy and preserves robust democratic governance.2

The long-term development of Zambia depends on a healthy and productive population. Without significant improvement in health, Zambia cannot achieve its goal of inclusive prosperity by 2030. This project is premised upon the hypothesis that improved health service delivery, combined with stronger institutions that are more accountable and an increased practice of healthy community behaviors and healthy lifestyles, will improve the health status of Zambians. To meet its goal, the project must achieve the following intermediate results.

Sub-IR 3.2.1 – Health Service Delivery Improved
Sub-IR 3.2.2 – Health Systems and Accountability Strengthened
Sub-IR 3.2.3 – Community Health Practices Improved

1.3  PROJECT DESCRIPTION

Sub-IR 3.2.1: HEALTH SERVICE DELIVERY IMPROVED

Health service delivery, as determined by the Ministry of Health (MOH), means that quality health care is delivered in a competent, clean, and caring environment.5 A strong health system provides services in an accessible, effective, efficient, safe, acceptable, and equitable manner.6 In the Zambian context, health service delivery must take into account the tremendous burden of diseases such as HIV/AIDS and malaria.

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5 According to the World Health Organization, key characteristics of good service delivery comprise the following: comprehensiveness; accessibility; coverage; continuity; quality; person centered and; accountability.

6 Accessible services are timely, geographically reasonable and provided in a setting where skills and resources are appropriate to the medical need. Effective service provides evidence-based care and results in improved health outcomes, based on need. Services are efficient when a system delivers care in a manner that maximizes resources and avoids waste. Safety refers to the ability to deliver care that minimizes risk and harm to service users. Acceptable care takes into account the preferences of the individual and the cultures of their communities. Equitable service delivery does not vary in quality because of personal characteristics such as gender, race, ethnicity, geographic location, or socioeconomic status.
while ensuring equitable access to basic health services. With the MOH emphasis on integrating services, the principle of a patient-centered approach, rather than a disease or financing-centered approach, is essential. As Zambia moves towards a decentralized health system, it must provide quality treatment to people where they are located – the community level – while emphasizing prevention, boosting demand for health services and strengthening the capacity of health workers.

Over the last decade, USAID, together with cooperating and implementing partners, has undertaken programs in family planning/reproductive health (FP/RH), maternal, newborn and child health (MNCH), nutrition, HIV/AIDS, malaria, TB, and water supply and sanitation. Moving forward, the project will scale these programs up in an integrated, cost-effective, and sustainable manner, while empowering the GRZ and key private and local entities to assume increasing responsibility for delivery of health services. In particular, activities will continue to prioritize better service delivery of MNCH, FP, integrated child health services and the prevention and control of communicable infectious diseases, such as HIV/AIDS, TB, and malaria. By increasing access to and delivery of quality health care services and by strengthening community-based mobilization and referrals, the project should improve the utilization of health services. As such, activities will achieve the following three outcomes:

3.2.1.1. Access to health services improved (primarily dependent on the health system);
3.2.1.2. Quality of health care services improved; and
3.2.1.3. Utilization of health services increased (primarily dependent on the individual and the community).

Illustrative activities for outcome 3.2.1.1 include:

- Training health workers in emergency obstetric and newborn care;
- Mobilizing community health workers to provide contraceptives;
- Developing age-appropriate reproductive health education for in-school and out of school youth (including for OVCs);
- Establishing partnerships with traditional leaders and local networks of influential individuals to increase access to FP-MNCH services;
- Increasing platforms for providing voluntary medical male circumcision (VMMC) services; and
- Equipping health facilities with commodities to expand PMTCT services (cross-cutting with IR 3.2.2 – Health systems strengthening).

Illustrative activities for outcome 3.2.1.2 include:

- Assisting MOH to review/update existing pre-service and in-service guidelines for informed choice of family planning;
- Training health workers on management of postpartum hemorrhage;
- Mentoring health workers for improved quality service delivery;
- Documenting and disseminating best practices;
- Training laboratory technicians to increase diagnosis capabilities for malaria; and
- Training and mentoring staff in logistics management (cross-cutting with IR 3.2.2).

Illustrative activities for outcome 3.2.1.3 include:

- Mobilizing community health leaders to reduce stigma and discrimination of vulnerable groups;
- Conducting operations research among rural women and men on their understanding of the role of family planning in improving health and quality of life;
- Supporting community groups to provide family planning education and links to services at immunization sites;
- Supporting TB patients in their adherence to Directly Observed Therapy -Short Course (DOTS);
- Increasing use of birth plans and access to maternal shelters;
• Working at the national level on health financing activities in line with the, soon to be released, national health care financing strategy, including support for a universally affordable health care package (cross-cutting with IR 3.2.2); and
• Providing technical assistance to the different levels of the health system on social and behavior change communication strategies (cross-cutting with IR 3.2.3).

**SUB-IR 3.2.2: HEALTH SYSTEMS AND ACCOUNTABILITY STRENGTHENED**

In Zambia, a significant gap exists between the need for quality health services and the health system’s capacity to meet the needs. USAID/Zambia will support a health system strengthening approach across Zambia’s health framework that focuses on client-centered services at the community level, to health operations planning at the district level, to health system coordination at the national level, and multi-sectoral initiatives across development sectors (e.g. education, democracy, and economic growth). While all capacity building and health systems work under this project is expected to have direct and tangible results in specific health outcomes, especially in HIV/AIDS, FP, MNCH, nutrition, and malaria prevention/treatment, the following health system strengthening outcomes will be achieved:

3.2.2.1. Improved human resource capacity and management
3.2.2.2 Strengthened leadership in and quality of the supply chain system
3.2.2.3 Improved systems of data collection and data use
3.2.2.4 Improved capacity to conduct research and develop new interventions
3.2.2.5 Improved governance accountability and advocacy

Illustrative activities for outcome 3.2.2.1 include:
• Task-shifting of treatment and care from facility-based health workers to Community Health Workers (CHW);
• Assisting the Zambian Health Worker Retention Scheme to strengthen overall staff forecasting and to increase non-financial incentives for remote areas;
• Providing technical assistance to the MOH to manage the HRH system, including recruiting, retaining, and equitably distributing personnel;
• Providing technical and financial assistance for development and deployment of a comprehensive human resource information system;
• Training private sector providers in business management and improving their ability to access resources through financial institutions; and
• Providing technical assistance to the MOH and training institutions to develop pre-service curricula (cross-cutting with IR 3.2.1).

Illustrative activities for outcome 3.2.2.2 include:
• Advocating for increased GRZ funding for commodities;
• Developing, assisting and monitoring the implementation of the national supply chain strategy;
• Strengthening GRZ skills in leading quantification and forecasting;
• Procuring commodities (with the goal of transitioning some procurement responsibilities to the MOH);
• Training GRZ staff to identify solutions to improve commodity delivery from the district or hub level to the facility-level (“the last mile”); and
• Strengthening logistics management to improve the timely supply of essential drugs and commodities (cross-cutting with IR 3.2.1 and 3.2.2).

Illustrative activities for outcome 3.2.2.3 include:
• Developing policies to increase the availability and accessibility of health information;
• Developing and maintaining the national OVC database;
Providing technical assistance to the Central Statistics Office and the MOH to plan and conduct facility-based surveys to identify and address gaps in the health system;

- Conducting costing studies to understand initial investments and recurring costs in Health Systems Strengthening (HSS);
- Providing technical assistance for Human Resources Information System (HRIS); and
- Providing technical assistance for key health financing activities (e.g., national health accounts analysis, and health insurance) (cross cutting with IR3.2.1).

Illustrative activities for outcome 3.2.2.4 include:

- Identifying and piloting technologies, products and approaches appropriate to Zambia (e.g., pneumococcal vaccine, mobile phone use);
- Designing and conducting feasibility studies for new technologies, products and approaches;
- Conducting operations research while scaling-up new technologies, products and approaches;
- Conducting research, program evaluations and sector reviews; and
- Building capacity on appropriate research methods (e.g., operational research methodologies).

Illustrative activities for outcome 3.2.2.5 include:

- Updating strategies, policies, and guidelines;
- Accelerating the implementation of approved policies (e.g., PMTCT Option B+);
- Increasing adherence to procurement legislation and regulations, particularly in the drug supply chain; and
- Training citizen and strengthening local organization’s institutional and advocacy capacity to increase demand for quality and affordable health services.

**Sub-IR 3.2.3: Community Health Practices Improved**

To address demand-driven and positive health-seeking behavior, the project will target activities at the community, family, and individual levels. Communities and individuals are responsible for practicing and promoting healthy behaviors and this is particularly important when widespread poverty exacerbates limited access to and low demand for health services. As social and environmental factors influence individual behavior, the project incorporates a holistic approach to bring about the desired changes in the adoption of positive health practices. Targeted behavioral objectives will be identified by thorough analysis of scientific evidence, and an analysis of current levels of relevant health seeking behaviors (ideally building off existing positive behaviors).

Utilizing a variety of media and interpersonal methods, the project will work with community, traditional and faith-based leaders, as well as schools, organizations and community networks to reach citizens with activities to address behavioral determinants. Activities will strengthen the GRZ ability to create and manage Social and Behavior Change Communication (SBCC) campaigns. Special emphasis placed on improving community and family-centered care, as well as targeting interventions for OVCs impacted by the HIV/AIDS epidemic. Emphasis will also be placed on expanding effective interventions to prevent gender-based violence (GBV), strengthening comprehensive services for victims of GBV, and improving the nutritional status of children.

Working under the assumption that disease prevention is more cost-effective than treatment; adopting healthy behaviors will reduce the burden on the health care system and improve the quality of life of Zambians. Communities have an important role to play in the wellbeing of their members, especially for those most vulnerable. The project’s three outcomes to improve community health practices are:

3.2.3.1 Increased Awareness, Knowledge, and Adoption of Healthy Behaviors
3.2.3.2 Improved Care and Resilience of Vulnerable Populations
3.2.3.3 Improved Household Food Security and Nutrition Status
Illustrative activities for outcome 3.2.3.1 include:
- Strengthening GRZ capacity to develop innovative SBCC strategies, harmonize tools and develop consistent messages at all levels, i.e. community, district, provincial, and national;
- Standardizing health communications priorities and roll-out of community-based approaches to validate beneficial health practices;
- Promoting healthy behaviors and healthy practices (HIV prevention, reduced GBV, safe water use, adequate nutrition, birth spacing, STI screening and treatment, TB prevention and treatment, etc.);
- Building the capacity of traditional, religious, community and parliamentarians’ leadership role in transmitting correct, up-to-date messages, and actively engaging and mobilizing their communities to participate in healthy activities;
- Training and deploying CHAs to promote healthy behaviors (MNCH, expanded immunization, essential nutrition action, positive living for PLWHA); and
- Establishing women-centered health development teams (community saving groups, neighborhood health committees, SMAGs (cross-cutting with IR3.2.1).

Illustrative activities for outcome 3.2.3.2 include:
- Providing comprehensive, integrated interventions addressing OVCs’ most critical care needs;
- Developing evidence-based policies and programs for efficacy of child and family support interventions;
- Integrating OVC and GBV activities within the HIV/AIDS continuum of response;
- Developing multimedia and multi-approach social and behavior change communications campaigns that target GBV prevention;
- Establishing GBV one-stop centers that provide legal aid, clinical and psychological services and economic assistance for GBV survivors; and
- Providing comprehensive HIV/AIDS prevention, care and treatment interventions to key populations.

Illustrative activities for outcome 3.2.3.3 include:
- Improving coordination and implementation of Essential Nutrition Actions (ENA) at targeted health facilities and community level focusing on pregnant women, children under two, and PLHIV;
- Coordinating and linking food security and nutrition interventions across all sectors, especially at FTF districts level;
- In collaboration with the Economic Growth team, conducting nutrition-related operations research to generate evidence on the impact of aflatoxin, hygiene, etc. on stunting;
- Supporting vulnerable households to improve food security through strengthened economic resilience and improved nutrition status;
- Providing micronutrient supplements to children under age five, pregnant women and the general population; and
- Assisting with health care financing to prevent deterioration of nutrition safety nets (Cross-cutting with IR3.2.2).

2.0 BASELINE ENVIRONMENTAL INFORMATION

The Republic of Zambia is one of the landlocked countries in Sub-Saharan Africa, and it is bordered by Namibia, Tanzania, Malawi, the Democratic Republic of the Congo, Zimbabwe, and Mozambique. The Zambian population is mainly concentrated in the Copperbelt Province and Lusaka. The country covers an area of 752,614 square kilometers making it the 39th largest country in the world. Zambia is characterized by tropical climate and consists of high plateaus, hills, mountains, and rivers. Zambia's elevation is between 1,000 and 1,600 meters above sea level, with an average altitude of 1,200 meters.
Zambia has 14 ecosystems classified into four types, namely grassland vegetation, thickets, woodlands, and forests.7

The Zambian Constitution (as amended by Act Number 18 of 1996), pledges:

“… to ourselves that we shall ensure that the State shall respect the rights and dignity of the human family, uphold the laws of the State and conduct the affairs of the State in such a manner as to preserve, develop, and utilize its resources for this and future generations.”

The Environmental Protection and Pollution Control Act, No 2 of 1990 as amended (EPPCA), is the supreme environmental law in Zambia and it prescribes the functions and powers of the Zambia Environmental Management Agency (ZEMA). The Agency (formerly known as the Environmental Council of Zambia), established in 1992, is mandated to protect the environment and control pollution to provide for the health and welfare of persons and the environment. Environmental issues cut across a wide variety of sectors and there are a number of government institutions and agencies outside of the ZEMA that are involved in environmental management. Sectoral agencies and planning authorities may include the Ministry of Lands, Natural Resources, and Environmental Protection, and the Ministry of Agriculture and Cooperatives.

In 1997, EIA Regulations No. 28 of 1997 was signed as a Statutory Instrument meant to provide for a proactive approach in environmental management and as a planning tool for the country. ZEMA is the custodian of the Environmental Management Act (EMA) No. 12 of 2011 and is responsible for its implementation and enforcement through its respective departments. ZEMA is empowered by EMA to protect water resources from environmental pollution. ZEMA is also mandated to provide guidelines and enforce the provision in the EMA on the sound management of waste, hazardous waste (such as health care waste), and sound management of chemicals throughout their life cycle. The EMA also provides for the undertaking of an EIA for projects involved in large construction activities. The EMA mandates projects that require an EIA to be implemented only after an approval by ZEMA is granted. Part III of the Act deals with Integrated Environmental Management including EIA, while Part IV deals with Environmental Protection and Pollution Control with specific sections on Waste Management, Air, Water, Pesticides, and Toxic Substances.

With respect to chemicals, the EMA requires that a person who intends to manufacture, import, export, store, distribute, transport, blend, process, reprocess, or change the composition of a pesticide or toxic substance, or who intends to reprocess an existing pesticide or toxic substance for a significantly new use, is required to petition the Agency for a license. Concerning pesticides, regulations are also in place concerning their registration, importation, and transportation.

The Environmental Impact Assessment (EIA) process has been formalized by the EPPCA. The EIA process is clearly set out in the EIA Regulations, 1997. The services provided by ZEMA, in relation to EIA studies, include among others:

- assisting the developer to determine the scope of EIA studies,
- reviewing project briefs, terms of reference, and environmental impact statements (EIS) and decision-making,
- conducting verification surveys of the affected environment,
- conducting compliance audits of the project between 12 and 36 months after implementation, and generally administer the EIA regulations.

Further advances in environmental and natural resources management were enhanced by the formulation of the National Environmental Action Plan (NEAP) in 1994. The NEAP seeks to integrate environmental concerns into the social and economic development planning process of the country.

The Forest Act of 2015 repeals and replaces the Forests Act, 1999 and provides for the establishment and declaration of National Forests, Local Forests, joint forest management areas, botanical reserves, private forests and community forests. It also provides for the participation of local communities, local authorities, traditional institutions, non-governmental organizations and other stakeholders in sustainable forest management; provides for the conservation and use of forests and trees for the sustainable management of forests ecosystems and biological diversity. The Act provides for the implementation of the United Nations Framework Convention on Climate Change, Convention on International Trade in Endangered Species of Wild Flora and Fauna, the Convention on Wetlands of International Importance, especially as Waterfowl Habitat, the Convention on Biological Diversity, the Convention to Combat Desertification in those Countries experiencing Serious Drought and/or Desertification, particularly in Africa and any other relevant international agreement to which Zambia is a party.

The Water Resources Management Act, 2011 provides for the establishment of the Water Resources Management Authority (WRMA) to manage water resources at national and local level. It vests all water in its natural state in the President and further calls for the management of water resources in an integrated and sustainable manner. The Board of the WRMA ensures the protection, conservation and sustenance of the environment, (b) take into account the regulations, standards and guidelines issued by, or under, the Environmental Management Act, 2011, and the Standards Act; (c) ensure that an environmental impact assessment is carried out, where necessary, in accordance with the Environmental Management Act, 2011.

The National Policy on Climate Change (2016) provides a framework for coordinated response to climate change issues in order to ensure climate resilience and low carbon development pathways for sustainable development towards the attainment of Zambia’s Vision 2030. The policy seeks to promote the mainstreaming of climate change into policies, plans and strategies at all levels in order to account for Climate Change risks and opportunities in decision making and implementation. It further gives guidance on how the Zambian economy can grow in a sustainable manner.

Other important Acts include:

- Zambia Wildlife Act No. 15 of 2015 - provides for wildlife management and conservation
- Agriculture (Fertilizer and Feed) Act No. 13 of 1994, Cap 226 - The Act provides for the regulation and control of manufacture, processing, importation and sale of agriculture fertilizers.
- Disaster Management Act No. 13 of 2010 - This Act provides for Disaster preparedness and response.
- Public Health Act (Cap.295) of 1995- An Act to provide for the prevention and suppression of diseases and generally to regulate all matters connected with public health in Zambia. This Act makes provision with respect to matters affecting public health in Zambia including prevention and suppression of infectious diseases including diseases communicable from animal to man, sanitation, protection of food, supply of water, protection from mosquitoes and pollution in general.
- The Zambia Wildlife Act (No. 14 of 2015) establishes the Department of National Park and Wildlife in the Ministry of Tourism and Arts, transfers ZAWA functions, and appoints a Director and officers to serve therein. Establish control and management of “National Parks, bird and wildlife sanctuaries and for the conservation and enhancement of wildlife ecosystems, biological diversity and objects of aesthetic, prehistoric, historical, geological, archeological and scientific interest in
National Parks. Provides for the sustainable use of wildlife and the effective management of the wildlife habitat in GMAs, as well as address community involvement in GMAs; Provide for the regulation of game ranching; and Provide for the licensing of hunting and control of the processing, sale, import, and export of wild animals and trophies.


Tropical forests and the conservation of biodiversity play a fundamental role in sustainable development. As such The U.S. Foreign Assistance Act (FAA) of 1961, as amended by Sections 118 and 119, requires that all USAID Missions conduct a periodic country analysis of the conservation and sustainable use of tropical forests and biological diversity. These analyses can help inform project design and implementation. The USAID/ Zambia Tropical Forestry & Biodiversity Assessments were completed as part of the USAID/Southern Africa Tropical Forestry & Biodiversity Assessments conducted in 2017.

2.1 LOCATIONS AFFECTED AND ENVIRONMENTAL CONTEXT (ENVIRONMENT, PHYSICAL, CLIMATE, SOCIAL)

The health portfolio’s activities cover all regions in the country. As such, this section discusses the context for the entire country.

Site selection for project activities is determined by USAID’s desire to reach the most vulnerable populations, by priorities set by the GRZ, and by possibilities of leveraging partnerships with other cooperating partners. The determination of sites is based on geographic coverage considerations, epidemiological factors, avoidance of duplication with other organizations, and the government’s need for assistance resulting from the sector’s decentralization. While some activities are national in scope, others are more targeted, based on anticipated level of future resources and ability to impact health outcomes.2

HIV/AIDS activities prioritize urban areas where HIV burden is highest. RMNCAH/N activities will mainly focus on Luapula, Northern, Muchinga, Northwestern, Copperbelt, and Central provinces. The Sida/USAID Continuum of Care activity will also be in Eastern and Southern Provinces and the Integrated Management of Childhood Illnesses National Evaluation will be at the national level. Stop GBV will be in approximately 30 districts in all provinces except Northern and Luapula Provinces. Malaria activities support the national level efforts with emphasis on high burden provinces that are presently Luapula, Northern, Muchinga, and Eastern provinces. Supply chain activities are nationwide. Health systems strengthening activities are also nationwide. Thus, overall the USAID/Zambia health portfolio activities cover Zambia nationwide.

Macroeconomic Fundamentals: After completing a reform program as a Heavily Indebted Poor Country (HIPC) and qualifying for the Multilateral Debt Relief Initiative (MDRI) in 2005 and 2006, respectively, Zambia turned around its image from a poor performing country to a country with good economic indicators and several years of strong economic growth. Macroeconomic performance, coupled with consistent, rapid growth in mining, construction, telecommunications, and tourism, helped spur GDP growth of over five percent per year for the decade ending in 2010. Macroeconomic indicators are
punctuated by a marked improvement in the World Bank’s Doing Business Report, which placed Zambia among the top ten reformers in 2010.8,9

**Stability:** Zambia has experienced relative stability that sets it apart from its neighbors, most notably Angola, the Democratic Republic of Congo, and Zimbabwe. Under continuous civilian rule since independence, Zambia has enjoyed the succession of political power through voting since multi-party democracy was introduced in 1991, though not without controversy.10

**Mining:** Natural resources figure prominently in Zambia’s development planning. Mining remains Zambia’s greatest source of earnings, and attracts high levels of investment from China, Switzerland, the United Kingdom, Canada, Australia and other countries. Unfortunately, Zambia’s dependence on mining, without pursuing previous plans to diversify the economic base, means most Zambians are not benefited by mining-led economic growth and are vulnerable to volatile commodity price swings.10

**Arable Land:** In addition to minerals, Zambia possesses vast tracks of arable land along with significant groundwater and surface water resources. According to the Zambia National Agricultural Policy (2004 – 2015), Zambia’s vast resources give it the potential to expand agricultural production. Of Zambia’s total land area, 58% is classified as medium to high potential for agricultural production. In addition, average rainfall in Zambia is suitable for a wide range of crops, fish, and livestock. However, only about 14% of agricultural land is currently used. Zambia has the best surface and underground water resources in Africa and its underground water aquifers are excellent prospects for irrigation programs. However, Zambia’s water resources are largely unexploited. 10,10

Because most of Zambia’s poor are dependent on rain-fed subsistence agriculture, programs that target agriculture development can potentially lift the most Zambians out of poverty. Zambia’s renewed participation in regional development dialogue through the Comprehensive Africa Agriculture Development Programme (CAADP) demonstrates positive GRZ engagement in agriculture-led development. The GRZ signed its CAADP Compact in January 2011, setting the stage for additional GRZ investments and policy change.10

**Climate:** Climate change may exacerbate existing problems related to the uneven distribution of water resources. Located within the Zambezi River basin and Congo River basin, Zambia has abundant surface water and groundwater. Nevertheless, water infrastructure is limited: 35 percent of the population lack access to clean water and 55 percent lack access to sanitation facilities. Water storage potential is negatively impacted by recurrent droughts in summer months, while floods in the north have led to contamination and the spread of waterborne illnesses that affect both humans and livestock.7,11,12

Zambians already suffer from climate-sensitive diseases such as malaria and diarrhea, the impacts of which climate change will likely compound. Of particular concern is the potential range expansion of disease-carrying vectors such as those that spread malaria, which already affects over 4 million Zambians annually. Cholera is a recurrent problem in peri-urban areas and linked to weather: a 2010 outbreak in Lusaka following heavy rains and flooding reached almost 4,500 cases. Between Jan–May 2016, Zambia recorded 1,179 cases. Furthermore, potential changes in agricultural productivity may exacerbate already high rates

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of malnutrition and food insecurity. Inadequate health coverage, high poverty rates and fragmented water supply and sanitation all contribute to the health sector’s vulnerability.\textsuperscript{7, 14, 13, 14, 15} Zambia’s ecosystems and the services they support are stressed by current climate variability. For example, Victoria Falls, a UNESCO World Heritage site, made international headlines in 2015 for its historically low water levels. Although approximately 38 percent of Zambia’s land has protected status, drought and reduced water availability drive wildlife from protected areas into human settlements, inevitably leading to conflicts. Zambia’s forests are already vulnerable in the face of deforestation, a function of agricultural expansion, mining and logging. Droughts and higher temperatures, projected to increase, have negatively impacted the miombo woodlands, which are critical sources for fuel, medicine and fodder. Fire risk in grasslands and the southern baikiaea woodlands (a source of export teak) increases with droughts and higher temperatures.\textsuperscript{16, 17, 18, 19}

**HEALTH**

**Family Planning:** A Zambian woman, on average, gives birth to 5.3 children by the end of her childbearing years. The 2013-14 DHS indicates that the overall unmet need for family planning is high, at 21.1 percent. While awareness of Family Planning (FP) among Zambians is high, knowledge has not translated into use of FP services. Modern contraceptive use among married women remains low at 44.8 percent.\textsuperscript{20}

**Maternal, Newborn, and Child Health:** Maternal and newborn deaths are largely preventable and indicative of inaccessible and poor-quality health care facilities, inadequacies of the health system, and low demand for and utilization of health facilities. For example, while 96 percent of Zambian women receive some antenatal care, only 64 percent deliver with the assistance of a skilled health provider. In the five years leading up to the 2013-2014 DHS, there were minimal changes in neonatal mortality. However, post neonatal, infant, and child mortality showed substantial improvements. Still, there were regional differences in the improvements. Although infant and under-5 mortality had declined by 58 percent and 61 percent, respectively, over nearly two decades, child mortality is still relatively high in Eastern and Luapula Provinces. The majority of children receive immunizations and vitamin A supplementation but only about 60 percent have access to improved drinking water sources.\textsuperscript{22}

**Nutrition:** Zambia has one of the highest rates of child undernutrition in the world. Nationally, 40 percent of children under age 5 are stunted, and 17 percent are severely stunted. More than eight in ten (82 percent) children age 6-8 months (both breastfed and non-breastfed) are introduced to complementary foods at an appropriate time. However, only 11 percent of children age 6-23 months is fed appropriately based on recommended infant and young child feeding practices.\textsuperscript{22}

**HIV/AIDS:** Human immunodeficiency virus (HIV) prevalence in Zambia has continued to decline. The recent Zambia Population HIV Impact Assessment (ZAMPHIA) survey shows a reduction of about 1.7 percentage points from 13.3% in 2014 to 11.6% in 2016. The health sector has also recorded remarkable progress on antiretroviral treatment (ART) coverage, which stands at 72% of the eligible people against

\textsuperscript{14} UNICEF. n.d. UNICEF Zambia Fact Sheets: Nutrition and Malaria.
\textsuperscript{18} USAID. 2012. Climate Change Adaptation in Zambia Factsheet.
\textsuperscript{19} Wilkins, H. 2016. Low water levels at Victoria Falls highlight southern Africa’s worst drought in 30 years.
the United Nations AIDS (UNAIDS) global target of 90%. Overall, 78 percent of women and 58 percent of men know that HIV can be transmitted through breastfeeding and that this risk can be reduced by taking special drugs during pregnancy, an increase from the figures reported in the 2007 Zambia Demographic Health Survey (63 percent of women and 46 percent of men). Though the rate of new infections is slowing, the number of people living with HIV/AIDS is growing because more people live longer due to life-extending antiretroviral therapy (ART).21

Tuberculosis (TB): Zambia has one of the world’s highest incidence rates of TB with an estimated incidence rate of HIV and TB at 218 per population of 100,000 people and a notification of 40,153 cases in 2016. Patients with known HIV-status who are HIV-positive make up 58 percent of new and relapse TB patients.22

Malaria: The 2015 MIS found that 77.0% of households have at least one insecticide-treated net (ITN), representing an increase from 2012. Sixty four percent (63.9%) of households reported sufficient ITN ownership to cover all the reported sleeping spaces within their respective households. Among all household members, 55.1% reported to have slept under an ITN the night before the survey. Twenty nine percent (28.9%) of households in Zambia reported their household sprayed in the previous twelve months. Despite the increases in coverage of key interventions, malaria parasite prevalence by microscopy increased in 2015 compared to 2012. One in five or 20.3% of children in Zambia are infected with malaria parasites compared with 14.9% in 2012. This increase was seen in rural and urban areas although the overall percentage of children infected in urban areas remained low at around 5.9%. Severe anaemia levels among children, another measure of the chronic effects of persistent infections, remained largely unchanged nationally at 6.2% in 2015 compared to 2012. Malaria remains a disease that disproportionately affects rural and less wealthy individuals.23

Gender-Based Violence and Vulnerable Children: Domestic violence and large numbers of vulnerable children also influence health outcomes in Zambia. As reflected in the 2013-14 DHS survey findings, domestic violence occurs across all socio-economic and cultural backgrounds. Forty-three percent of Zambian women who were between ages 15 and 49 and who had ever been married had experienced physical or sexual abuse. Thirty-one percent had experienced physical violence in the twelve months preceding the 2013-2014 survey.22

The survey also highlights the large numbers of vulnerable children. Overall, 35 percent of households have foster or orphan children. There is little difference in the distribution of foster children by rural and urban areas. Single orphans are present in 15 percent of households, whereas double orphans are present in 4 percent of households.22

Strategic Framework: The Zambia National Health Strategic Plan for 2017-2021 has a strategic framework that focuses on strong political leadership and commitment from the central government and Ministry of Health (MOH); better planning, management, and monitoring and evaluation at all levels of the health sector; sustainable and equitable financing mechanisms; improved geographical access for the entire population; the availability of sufficient numbers of quality human resources; the availability and rational use of drugs and medical supplies; community participation in health activities; continued and enhanced partnerships between Government and Cooperating Partners (CPs); timely provision of adequate funds; strengthening of referral systems and specialized services; development of strong research capabilities; and ensuring good quality of service and delivery at all levels of care. The NHSP 2017-2021 builds on the

21 Ministry of Health [Zambia], Zambia National Health Strategic Plan 2017-2021, report.
success of the NHSP 2011-2016 with greater prominence placed on selected areas as well as other new initiatives being introduced based on emerging needs in the health sector. In the 2017-2021 NHSP, primary health care has been given greater emphasis and more funds will be directed to these programs to ensure that outlined targets are met. More attention will be paid to preventing and treating non-communicable diseases, health promotion, social determinants of health, disease surveillance, and enhancing good governance. New initiatives will be introduced to mobilize additional resources to implement this plan, such as Social Insurance Schemes. Increased community health interventions to bring services closer to the people through revitalization of Neighborhood Health Committees (NHCs) will be encouraged.
3.0 ANALYSIS OF POTENTIAL ENVIRONMENTAL RISK

- Activities undertaken to train and provide recommendations and technical assistance to improve health services and treatment as well as for quality assurance and quality improvement initiatives conform to a class of activities normally eligible for categorical exclusion. However, failure to adequately address the environmental dimensions attendant to clinical diagnostic services and treatment (e.g., proper handling and disposal of medical waste including blood, sputum, sharps, obsolete or expired drugs, and other commodities) may result in adverse environmental impacts.

- Construction activities have the potential to cause both direct and indirect adverse impacts on the environment. Indirect impacts are induced changes in the environment, population, and use of land and environmental resources. Potential rehabilitation and construction impacts associated with small-scale construction activities are to be mitigated by applying guidance for environmentally sound design and management (ESDM), including that found in USAID’s Sector Environmental Guidelines at http://www.usaidgems.org/Sectors/construction.htm and the IFC environmental, health and safety guidelines at www.ifc.org/ehsguidelines.

- Due diligence is required to ensure that procurement and the increased supply and demand of pharmaceuticals do not compromise efforts to adequately handle and store pharmaceutical and medical supplies and dispose of obsolete or expired drugs and other commodities that could negate the benefits. Pharmaceutical drugs are chemicals used for diagnosis, treatment (cure/mitigation), alteration, or prevention of disease, health condition, or structure/function of the human body. Pharmaceuticals including vaccines, chemotherapies, and radioactive have specific storage time and temperature requirements, and may expire before they are able to be used, particularly in remote areas. Pharmaceutical waste may also accumulate due to inadequacies in stock management and distribution, and lack of a routine system of disposal. Activities undertaken in the procurement of pharmaceuticals and medical supplies conform to a class of activities normally eligible for categorical exclusion. However, failure to adequately address the environmental dimensions attendant on, for example, the proper handling and disposal of obsolete or expired drugs, and other commodities may result in adverse environmental impacts. Effects on aquatic life are a major concern in disposal of pharmaceuticals. Even in small quantities, some compounds have the potential to cause harm to aquatic life. Measured toxicities of some tested pharmaceuticals have shown that acute effect of single substances in the aquatic environment is very unlikely.

- Electronic Waste

Electronic waste or e-waste includes discarded electronic appliances such as computers, printers, mobile phones, etc. E-waste contains valuable metals as well as potential contaminants that are harmful to the environment such as Pb, Sb, Hg, Cd, Ni, polybrominated diphenyl ethers (PBDEs), and polychlorinated biphenyls (PCBs). Burning e-waste generates other environmental contaminants. Recycling techniques in underdeveloped countries may include burning and dissolution in strong acids with few measures taken to prevent public health and environmental pollution. These effects can be severe and cause migration of communities near the contaminated water and food chains. Skin contact and inhalation for e-waste workers can lead to health problems. Smoke, dust, drinking water and food contamination for the wider

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24 Includes analysis of environmental and social
community can also lead to health problems. Agricultural and manufactured products can be contaminated with poorly managed e-waste.25

All activities that purchase electronics such as computers, printers, and mobile phones may have a negative impact on the environment. Current and anticipated activities in the USAID/Zambia IR 3.2 Health Status improved project are listed in Table I. For the purposes of this IEE, the activities or mechanisms have been classified into illustrative activity classes based on similar environmental impacts.

- **GOVERNMENT-TO-GOVERNMENT** The Public Financial Management Risk Assessment Framework (PFMRAF) identified a number of risks in working directly with the MOH and Medical Stores Limited (MSL). Similar to planned awards for local organizations, direct government-to-government awards will integrate capacity-building and technical assistance to strengthen immunization, malaria, maternal and child health, supply chain, family planning, TB and HIV/AIDS service delivery in a manner that gradually transitions increasing responsibilities and leadership to local entities. Risks identified during the PFMRAF will be mitigated using fixed amount reimbursement awards and output-based reimbursements, among other mechanisms.

### 3.1 POTENTIAL IMPACTS BY SUB IR

Current and anticipated activities in the USAID/Zambia IR 3.2 Health Status improved project are listed below. The activities or mechanisms have been classified into illustrative activity classes based on similar environmental impacts.

1. **Family Planning, Reproductive Health and Maternal, Newborn, Child, and Adolescent Health and Nutrition (RMNCAH-N)**

   Activities in this illustrative activity class will include technical assistance, training and research and other support, including provision of drugs and other medical supplies, and will be provided to strengthen clinical and community services in all of these areas. Of these activities, delivery of clinical and community health services has potential for direct effect on the environment.26

   Some behavior change activities focus on reduction of high-risk behaviors and strengthening of community action for health, using mass communication, interpersonal communication, folk media, opinion leaders and community development approaches. These activities will not have a direct effect on the environment.26

   Other activities under this illustrative activity class will increase access to health protection products. This will include social marketing of condoms, oral contraceptives and point-of-use water purification. These activities may have a direct effect on the environment. Use of condoms presents the risk of infection from improper disposal and can also have an impact on the environment from improper disposal (e.g. burning at low temps releases chemicals into the atmosphere and improper disposal can lead to waste buildup). Oral contraceptives and water purification materials present risks to consumers if their efficacy and purity is not adequately assured. There is also new research showing that

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contraceptives have been shown in water sources, although the direct impact on health is unknown and still being studied.26

2. HIV/AIDS and TB

Activities in this illustrative activity class will include technical assistance, training and research and other support, including provision of drugs and other medical supplies, and will be provided to strengthen clinical and community services in all of these areas. Of these activities, delivery of clinical and community health services has potential for direct effect on the environment.26

Some behavior change activities focus on reduction of high-risk behaviors and strengthening of community action for health, using mass communication, interpersonal communication, folk media, opinion leaders and community development approaches. These activities will not have a direct effect on the environment.

Other activities under this illustrative activity class will increase access to health protection products. This will include social marketing of condoms and oral contraceptives. These activities may have a direct effect on the environment. Condom use presents the risk of infection from improper disposal and can also have an impact on the environment from improper disposal (e.g. burning at low temps releases chemicals into the atmosphere and improper disposal can lead to waste buildup).26

Further, improper training, handling, storage and disposal of the waste generated in healthcare facilities or activities can spread disease through several mechanisms. Transmission of disease through infectious waste is the greatest and most immediate threat from healthcare waste. If waste is not treated in a way that destroys the pathogenic organisms, dangerous quantities of microscopic disease-causing agents—viruses, bacteria, parasites or fungi—will be present in the waste. These agents can enter the body through punctures and other breaks in the skin, mucous membranes in the mouth, by being inhaled into the lungs, being swallowed, or being transmitted by a vector organism. Those who come in direct contact with the waste are at greatest risk. Examples include healthcare workers, cleaning staff, patients, visitors, waste collectors, disposal site staff, waste pickers, substance abusers and those who knowingly or unknowingly use “recycled” contaminated syringes and needles. Although sharps pose an inherent physical hazard of cuts and punctures, the much greater threat comes from sharps that are also infectious waste. Healthcare workers, waste handlers, waste-pickers, substance abusers and others who handle sharps have become infected with HIV and/or hepatitis B and C viruses through pricks or reuse of syringes/needles. Contamination of water supply from untreated healthcare waste can also have devastating effects. If infectious stools or bodily fluids are not treated before being disposed of, they can create and extend epidemics. The absence of proper sterilization procedures is believed to have increased the severity and size of cholera epidemics in Africa during the last decade.30

3. Malaria

Malaria activities will include technical assistance, malaria prevention and treatment activities, and community behavior change interventions. Activities that may have a direct effect on the environment include activities that increase access to health protection products and services, namely through the distribution of ITNs, implementation of indoor residual spraying (IRS) campaigns, and potential outdoor mosquito baits and traps.

Some behavior change activities focus on reduction of high-risk behaviors and strengthening of community action for health, using mass communication, interpersonal communication, folk media, opinion leaders and community development approaches. These activities will not have a direct effect on the environment.26
Other preventive and treatment activities that involve medical supplies and commodities such as intermittent preventive treatment in pregnancy (IPTp), treatment medications, and testing equipment generate medical waste. These activities may impact the environment if medical waste is poorly handled and disposed.

The distribution of ITNs has been shown to be a cost-effective and efficacious approach to malaria vector control in many situations, and as such provides significant public health benefits. Along with these benefits, however, the use of these materials treated with insecticides creates tangible risks to human health and the environment throughout the life cycle of the insecticide products. Continuous exposure to ITNs may have some risks that need to be monitored over time. In addition to concerns regarding distribution and use of ITNs, disposal of bed nets, particularly by burning, can result in adverse environmental and human health effects.

Adverse health and environmental impacts also arise from fishing with mosquito nets. Using ITNs to fish can cause leakage of pesticides into the water which are harmful to fish. Secondly, the small weave of the nets catches even fingerlings and thus damage fish stocks where nets are being used.

Malaria prevention activities also involve indoor residual spraying (IRS). IRS interventions may have environmental impacts through unintentional pesticide exposure, leading to acute yet transitory health impacts for beneficiaries and spray operators. Environmental impacts can include contamination of water sources and agriculture. IRS pesticides may also be pilfered. When pilferage occurs, use of IRS pesticides becomes unregulated. In these situations, the potential health and environmental impacts are amplified.

Enhanced vector control may include outdoor mosquito baits and traps. Depending on the type of bait or trap, other insects besides mosquitoes could be trapped by these interventions as well. Potentially trapping other insects could have environmental impacts by trapping beneficial insects and disturbing ecosystems.

4. CONSTRUCTION

Construction activities have the potential to cause both direct and indirect adverse impacts on the environment. 

An example of a direct impact is the filling of a wetland to use as a project site. Construction in wetlands, estuaries, or other sensitive ecosystems may destroy or significantly damage exceptional natural resources and the benefits they provide (ecosystem services). This damage may reduce economic productivity, impair essential ecosystem services (such as flood risk reduction, which may become increasingly important in some areas as climate change alters precipitation patterns), or degrade the recreational or cultural value of these resources. Often the identification of areas as reserves or special designation is an indication of such ecosystems, and local consultation to understand the value that may be contained in the impact area is essential.

Other types of potential environmental impacts of construction projects include damage to sensitive or valuable habitats, unsustainable use of biological resources, depletion or loss of access to ecosystem services, changes to air quality or noise levels, changes to soil or water quality, sedimentation of surface water, contamination of ground and water supplies.

Social impacts of construction projects can include displacement and involuntary resettlement, impacts on indigenous peoples and their traditional activities, poor worker management, increased community
disease or accidents, removal of or damage to tangible and intangible cultural heritage, disproportional impacts to persons in poverty and vulnerable groups.\textsuperscript{26}

The impact assessment required under 22 CFR 216 should include identification potential social impacts, especially of those who may be considered marginalized or vulnerable. Vulnerable or marginalized people may have reduced capacity to cope with project impacts. For instance, if a project affects available essential resources, their access to alternative resources is likely to be limited. They have fewer means to absorb adverse changes or shocks and may be less able to build on beneficial changes to their resource bases. Within larger societal groups, pockets of vulnerability may exist. For instance, women are not inherently more vulnerable to project impacts than men. However, depending on the impacts, some groups of women, such as women-headed households, pregnant women, and widows may be vulnerable.\textsuperscript{35}

If not managed correctly, a project may cause poverty in a community. Examples of poverty risks are those posed by incomplete or poorly managed resettlement or livelihood restoration processes; lack of local investment that results in over-dependence of the community on the project; and overcrowding and draining of resources due to in-migration. These risks should be considered in all the actions taken by the project.\textsuperscript{35}

It is essential when considering investments and measures to enhance benefits that equity be central to defining these measures. Long-term livelihood benefits should be prioritized, and the project manager should understand the local realities to understand where investments are most needed.\textsuperscript{35}

From the perspective of equity and human rights protections, it is important that information and communication activities are carried out in such a way that all people have equal access to information. This does not mean that the same instruments and formats should be used for all groups but that access to information should be available across social groups. In the same way, grievance mechanisms should be accessible by all social groups, where specific attention should be given to vulnerable groups whose voices might not be respected or represented by a majority group.\textsuperscript{35,27}

5. SOLAR

Environmental impacts from the installation of solar panels mainly result from land clearing and from improperly managed batteries. If solar panels are expected to be installed in selected rural health facilities, which will not require land clearing, solar photovoltaic modules still require a charge controller, battery or an inverter. Off-grid solar photovoltaic systems usually use lead-acid batteries, which can be the target of thefts for repurposing or selling as scrap metal. Battery acid can be released unsafely into the environment when dismantled to retrieve the metal. Specific areas of consideration include are discussed here.\textsuperscript{26}

Land Use Changes. Land and soil in the designated area can be affected by land clearing, construction, and disassembly of both thermal and PV systems (especially if a well needs to be drilled for a PV pumping system). Sensitive biological or cultural heritage sites may be adversely affected by these land

\textsuperscript{26} United States Agency for International Development, Sector Environmental Guideline: Construction, report (Global Environmental Management Support, 2017).
changes. Typically, the land use conversion for PV power plants is 100 ft²/kW (assuming peak generation).²⁸

**Solar thermal systems are predominantly located on rooftops.** Solar PV systems can also be located on rooftops. In such cases, land changes are not a significant concern. For large enough ground-based systems, land changes can result in habitat loss and/or interfere with existing land uses. After construction, however, much of the land around the array will repopulate with local flora, though some mowing and maintenance will be required for operations and maintenance activities.³⁸

**Pollutants.** Liquid coolant changes required during operation of solar thermal systems create a risk for accidental water contamination. PV systems face low risks of accidental pollution, except in the case where a system fire could release pollutants into the environment. In these cases, the risk of pollutant emissions is consistent with similar risks from any electrical system. PV systems in developing countries typically rely on battery packs. Batteries contain toxic materials that must be disposed of as hazardous waste when battery life is over.³⁸

**Water Use.** Drilling a well for solar water pumping can disrupt natural groundwater flow and quality. Alterations of the natural pressure gradient during drilling can also interrupt water production of nearby wells. Periodic cleaning of PV panels may be necessary in areas with limited rainfall, and requires non-trivial amounts of water. For utility-scale PV, 26-30 gallons of water are needed per MWh.³⁸

**Indirect Impact.** PV systems requiring mining of silica and various metals include ‘energy metals’ such as gallium, indium, selenium and tellurium. These impacts may not be apparent to end users, but should be addressed as part of lifecycle environmental assessments of PV projects. Also not apparent to end users is the manufacturing process of PV systems, which is energy-intensive. The amount of hazardous materials depends on the cell type, with mono crystalline cells containing the most dangerous materials. During regular processes, gases that are used such as silane and phosphine are not dangerous as air emissions, but are highly toxic in the case of accidents or leaks.³⁸

**Security.** High value technology like solar PV systems can be a major target for theft. Battery theft can have a particularly negative environmental impact, as thieves are known to dispose of battery fluid haphazardly.³⁸

6. **Health Systems Strengthening (Governance, Financing, Information Systems, etc.)**

These activities will either have no direct effect on the environment or, if they deal with a specific health area, such as HIV/AIDS or child health an assessment will be done to ascertain the threshold.

7. **Monitoring and Evaluation, Research/ Implementation Science**

These activities will either have no direct effect on the environment or, if they deal with a specific health area, such as HIV/AIDS or child health, those activities will fall under the other illustrative activity classes’ potential health impacts and mitigation strategies.

8. **Commodities and Logistics**

Pharmaceuticals including vaccines have specific storage time and temperature requirements, and may expire or lose efficacy before they are used, particularly in remote areas where demand is low and/or infrequent. Pharmaceutical waste may also accumulate due to inadequacies in stock management and distribution and/or lack of a routine system of disposal. The effects of pharmaceutical waste in the

environment are different from conventional pollutants. Drugs are designed to interact within the body at low concentrations to elicit specific biological effects in humans, and which may also cause biological responses in other organisms. There are many drug classes of concern, including antibiotics, antimicrobials, antidepressants, and estrogenic steroids. Their main pathway into the environment is through household use and excretion, and through the disposal of unused or expired pharmaceuticals.30

Effects on aquatic life are a major concern in disposal of pharmaceuticals. A wide range of pharmaceuticals have been discovered in fresh and marine waters globally, and even in small quantities some of these compounds have the potential to cause harm to aquatic life. Additional health risks related to disposal include burning pharmaceuticals and plastic medical supplies (including new or used condoms) at low temperatures or in open containers results in release of toxic pollutants into the air.30

The distribution of ITNs has been shown to be a cost-effective and efficacious approach to malaria vector control in many situations, and as such provides significant public health benefits. Along with these benefits, however, the use of these treated materials with insecticides creates tangible risks to human health and the environment throughout the life cycle of the insecticide products. Continuous exposure to ITNs may have some risks that need to be monitored over time. In addition to concerns regarding distribution and use of ITNs, disposal of bed nets, particularly by burning, can result in adverse environmental and human health effects.

Adverse health and environmental impacts also arise from fishing with mosquito nets. Fishing with mosquito nets can cause leakage of pesticides into the water which are harmful to fish. Secondly, the small weave of the nets catches even fingerlings and thus damage fish stocks where nets are being used.
4.0 ENVIRONMENTAL DETERMINATIONS

4.1 RECOMMENDED ENVIRONMENTAL DETERMINATIONS

A Categorical Exclusion is recommended for the following classes of activities, as per CFR §216.2(c)(2): (i) education, technical assistance, or training programs except to the extent such programs include activities directly affecting the environment (such as construction of facilities, etc.); (v) document and information transfers; viii) programs involving nutrition, health care, or family planning services except to the extent designed to include activities directly affecting the environment (such as construction of facilities, water supply systems, wastewater treatment, etc.); (xiv) studies, projects or programs intended to develop the capability of recipient countries to engage in development planning; and (xv) activities which involve the application of design criteria or standards developed and approved by USAID.

- Capacity building to communities and MOH for improved community- and facility-based services through training, technical assistance in clinical diagnosis, treatment, and service delivery, as well as the institutionalization of feedback and reporting systems for community reporting on client satisfaction
- Community engagement and improved health communications through increased demand for quality services, operationalization of the National Health Communications Strategy and to develop and implement effective health communications, and increased access to health information
- Technical assistance and collaborative support for Health Systems Strengthening through strengthened leadership and governance, institutionalized quality assurance and quality improvement initiatives for improved healthcare processes, strengthened human resources for health management at all levels, and increased financial sustainability of services
- Technical assistance and public education and promotion for improved water, sanitation, and hygiene behavior improved management, maintenance and operation of safe water points
- Program Monitoring, Learning, Assessment, and Evaluation Activities

There are qualifiers associated with these categorical exclusions, e.g., if any topic associated with these activities is one that inherently affects the environment, such as training (see below for more information on training that falls under the negative determination with conditions).

While a Negative Determination with Conditions is recommended for the following illustrative activity classes in the USAID/Zambia health portfolio:

- HIV/AIDS, malaria, TB, and other diagnostic testing: These activities entail the use, storage, transportation and disposal of blood and/or the generation of medical waste (e.g., used syringes) for diagnostics. These activities present the potential for disease transmission from the generation, management and disposal of blood (including blood products) and medical waste, and require appropriate mitigation measures and conditions.
- Treatment of malaria, HIV/AIDS, TB, and other illnesses or health complications during delivery: Activities such as direct clinical or treatment services have the potential for generation and disposal of medical waste. It is required that best practice approaches be adopted to ensure that adequate application of medical waste management and disposal procedures are exercised. Management of expired medicines or commodities, and outdated equipment: Activities to support the Government of Zambia with the proper disposal of expired commodities or equipment, particularly those that are procured with USAID resources, are critical.
● HIV/AIDS testing or training related to malaria prevention that involves use and disposal of medical waste, such training will include information on how to minimize and/or mitigate these impacts. Examples include, instruction on safe disposal of sharps and biological samples generated from HIV/AIDS testing or training in proper household behaviors to minimize exposure during indoor residual spraying campaigns and proper use of insecticide-treated materials like bed nets. Likewise, demand creation efforts for VCT, etc., have downstream implications on health care waste management capacity.

● Small-scale water supply and sanitation activities

● Solar energy and construction

● USAID Health Integrated Infrastructure Design Activity is a new activity that involves the construction/renovation of the Neonatal Intensive Care Unit at the Women and Newborn Hospital in Lusaka. This activity incorporates Architectural and Engineering services for the initial assessment, planning and design of the NICU and the actual construction/renovation. The activity is not expected to be more than 1000m2 in size and is unlikely to cause significant adverse environmental impacts. An EMMP will be developed and measures of mitigation will be in place.

**TABLE 2: ENVIRONMENTAL DETERMINATIONS.** See Section 5 and Table 4 for Conditions and Mitigation Measures.

<table>
<thead>
<tr>
<th>Activity- Sub-IR</th>
<th>Categorical Exclusion</th>
<th>Negative Determination</th>
<th>Positive Determination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub-IR 3.2.1 Health Service Delivery Improved</td>
<td>✓</td>
<td>✓</td>
<td>✓ (w/conditions)</td>
</tr>
<tr>
<td>Sub-IR 3.2.3 Care and support at the community</td>
<td>✓</td>
<td>✓</td>
<td>✓ (w/conditions)</td>
</tr>
<tr>
<td>Sub-IR 3.2.2 Health Systems and Accountability Strengthened</td>
<td>✓</td>
<td>✓</td>
<td>✓ (w/conditions)</td>
</tr>
</tbody>
</table>
4.2 CLIMATE RISK MANAGEMENT

This assessment services to document the results of the Climate Risk Screening conducted to evaluate the potential climate risks of the described activities. In accordance with Executive Order (EO) 13677 and Mandatory Reference for ADS 201 on Climate Change in USAID Strategies, USAID must conduct climate risk management screenings for all new strategies, projects, and activities, as of October 1st, 2016. Using the Zambia Climate Risk Profile, USAID/Zambia assessed the health portfolio using the Climate Risk Screening and Management Tool, assigned a risk rating and developed mitigation actions that could be included in activity design and implementation. Opportunities to strengthen climate resilience for the portfolio were also identified.
<table>
<thead>
<tr>
<th>Tasks/Defined or Illustrative Interventions</th>
<th>Climate Risks</th>
<th>Risk Rating</th>
<th>How Risks are Addressed at the Project Level?</th>
<th>Further Analysis and Actions for Activity Design/Implementation</th>
<th>Opportunities to Strengthen Climate Resilience</th>
</tr>
</thead>
</table>
| I: Family Planning/ Reproductive Health and Maternal, Newborn, Child, and Adolescent Health and Nutrition (RMNCAH/N) | - Increased temperatures increase the risk of pre-term birth and related infant deaths  
- Lower agricultural productivity as a result of climatic changes is likely to result in higher rates of stunting and consequently more complicated (and potentially more expensive) births.  
- Increased flooding may impact people’s ability to access family planning services and so we may see an increase in fertility rates. An increase in family size is likely to result in an increase in greenhouse gas emissions per household. | MOD | No further analysis is needed. | Consider including contingency plans to ensure that flooding does not impact access to family planning, i.e. ensuring that women have enough stock to take them through the rainy season. | - Work with the MoH to consider integrating heat warning into reproductive health services  
- Collaborate with GRZ Ministry of Education to provide a school feeding program to help limit stunting.  
- Work with the GRZ to consider alternative ways to increase access to family planning services during extreme weather events. |
<table>
<thead>
<tr>
<th>2: HIV/AIDS and TB</th>
<th>MOD</th>
<th>3: Malaria</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Increases in temperature, precipitation, and humidity may increase the spread/season duration of malaria in northern Zambia, where the malaria prevalence is already the highest in the country.</td>
<td>MOD</td>
<td>Early warning systems designed to detect and respond to malaria outbreaks are essential in order to mediate the projected temperature and precipitation changes.</td>
</tr>
<tr>
<td>- If rates of malnutrition increase due to the impact of climate change on agricultural productivity, HIV/AIDS antiretrovirals will potentially be less effective for those affected.</td>
<td>MOD</td>
<td>Moderate risks will be identified and integrated during activity design (solicitations) and activity implementation (work plan and MEL plan).</td>
</tr>
<tr>
<td>- Increased flooding may impact people’s ability to travel to health facilities to collect their medication which is likely to have negative consequences for their health.</td>
<td>MOD</td>
<td>RFAs/RFPs developed for individual activities will contain language that requires implementing partners to address specific climate change risks as part of EMMP development.</td>
</tr>
<tr>
<td>- Urban migration due to climate change impacts may result in higher transmission rates of some diseases such as TB.</td>
<td>MOD</td>
<td>Design of early warning system to detect and respond to malaria outbreaks. During activity design, the USAID/Zambia health team will consider how to mitigate for this risk during their design, in particular how to strengthen data collection and analysis systems to track changing patterns of malaria related to weather patterns. This will then be reflected in the solicitations (RFA/RFP), the work plan, and the MEL plan. We can also track in the EMMP, but to ensure strong climate integration, we should also consider during activity design (including solicitations) and activity implementation (work plan, MEL plan.) If climate risks result in malnutrition increases, consider supplemental feeding programs or cash stipends to improve nutrition.</td>
</tr>
<tr>
<td>- National data collections such as the DHS and the National Malaria Indicator survey are opportunities to collect data related to climate risk (e.g., specific context indicators, integrating weather data into health data collection) to help begin tracking changes in malaria patterns and other climate sensitive diseases and to improve strategic planning.</td>
<td>MOD</td>
<td>Accelerate roll out of multi-month scripting, allowing for 90 days between clinic/pharmacy visits; expand community ART groups (allows one person to pick up drugs for other members of the group)</td>
</tr>
<tr>
<td>- Share information on the potential impacts of changing climatic conditions on, e.g. malaria transmission rates with the private sector (e.g., mining companies).</td>
<td>MOD</td>
<td>Social and behavior change campaigns to educate people on potential impacts of the changing climate on health, storage of medicines, etc.</td>
</tr>
<tr>
<td>- National data collections such as the DHS and the National Malaria Indicator survey are opportunities to collect data related to climate risk (e.g., specific context indicators, integrating weather data into health data collection) to help begin tracking changes in malaria patterns and other climate sensitive diseases and to improve strategic planning.</td>
<td>MOD</td>
<td>Accelerate roll out of multi-month scripting, allowing for 90 days between clinic/pharmacy visits; expand community ART groups (allows one person to pick up drugs for other members of the group)</td>
</tr>
<tr>
<td>- Social and behavior change campaigns to educate people on potential impacts of the changing climate on health, storage of medicines, etc.</td>
<td>MOD</td>
<td>Social and behavior change campaigns to educate people on potential impacts of the changing climate on health, storage of medicines, etc.</td>
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<tr>
<td>Construction:</td>
<td>MOD-Solar</td>
<td>HIGH - Construction</td>
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<tr>
<td>Construction:</td>
<td>Construction:</td>
<td>Construction:</td>
</tr>
<tr>
<td>- Damages to energy, transportation, water resources, communications, housing, and other infrastructure from extreme weather events</td>
<td>Moderate risks will be identified and integrated during activity design (in solicitations) and activity implementation (work plan and MEL plan).</td>
<td>Employ renewable energy technologies in new designs.</td>
</tr>
<tr>
<td>- Adverse impacts on worker health due to increased temperature stress, and increased costs to mitigate it</td>
<td>Health facilities designed with increased ventilation</td>
<td>- Design back-up transportation service</td>
</tr>
<tr>
<td>- Increase in pollutants entering streams from impervious surfaces due to increased storm water runoff resulting from increased precipitation</td>
<td>RFAs/RFPs developed for individual activities will contain language that requires implementing partners to address specific climate change risks as part of activity implementation and EMMP development.</td>
<td>- Construct storm surge barriers</td>
</tr>
<tr>
<td>Indirect:</td>
<td>An engineer of record should screen construction design for climate risks prior to construction</td>
<td>- Elevate driveways</td>
</tr>
<tr>
<td>- Adverse impacts on individual health and communal care systems and resources</td>
<td>Construction projects should take climate change into account by including elements designed for adaptation. Adaptation can be defined as adjustments in natural or human systems, in response to actual or expected climate change stressors that moderate harm or take advantage of beneficial opportunities. USAID references (ADS 201 series) on climate change should be read as mandatory guidance on this topic.</td>
<td>- Relocate infrastructure to less exposed locations</td>
</tr>
<tr>
<td>Lost productivity due to disruptions in piped water, sewerage, and other public services if infrastructure is damaged</td>
<td></td>
<td>- Use permeable pavement</td>
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<tr>
<td>- Higher operating and maintenance costs</td>
<td></td>
<td>- Increase financial and technical resources for more frequent maintenance and repairs</td>
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<tr>
<td></td>
<td></td>
<td>- Establish natural buffer zones on coasts Plan for redundancy to accommodate disruptions in service (e.g., water supply); install backup systems for critical hospital, home needs</td>
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<tr>
<td>5. Health Systems Strengthening (governance, financing, information systems, etc.)</td>
<td>Risks to achieving results are low for current and future timeframes. All risk accepted.</td>
<td>LOW</td>
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<td>---------------------------------</td>
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</tr>
<tr>
<td>6. Monitoring and Evaluation, Research/Implementation on Science</td>
<td>Risks to achieving results are low for current and future timeframes. All risk accepted.</td>
<td>LOW</td>
</tr>
</tbody>
</table>
### 7. Commodities and Logistics

**- Increased flooding and higher precipitation rates are likely to make it more difficult to distribute commodities in a timely manner due to damaged infrastructure, inaccessibility due to road washouts, etc.**

- Health system infrastructure, including vehicles and equipment, is likely to experience more wear and tear and require more regular maintenance due to increased flooding, higher temperatures, increased precipitation rates, etc.

- Poorly sited infrastructure is more likely to be damaged by weather events.

**MOD**

- Moderate risks will be identified and integrated during activity design (in solicitations) and activity implementation (work plan and MEL plan).

- Flexible work plan that allows for realignment of activities due to flooding.

- Ensure partners have contingency plans in place to respond to flooding and other disasters that may impact transport of commodities.

- RFAs/RFPs developed for individual activities will contain language that requires implementing partners to address specific climate change risks as part of activity and EMMP development.

- Build pharmaceutical storage facilities to withstand storm and flood. Implement waste handling protocols.

- Engineering analysis to include consideration of climate change and its potential impacts on the location (siting), functionality, and sustainability of resulting infrastructure and infrastructure services.

At activity design phase, the USAID/Zambia health team will consider how to mitigate for this risk during their design. This will then be reflected in the solicitations (RFA/RFP), the work plan, and the MEL plan. We can also track in the EMMP, but to ensure strong climate integration, we should also consider during activity design (including solicitations) and activity implementation (work plan, MEL plan.) An engineer of record should screen construction design for climate risks prior to construction.

- Conduct analysis on potential impact of changing climatic conditions on distribution of drugs to ensure local needs are met (e.g., may need to stock additional drugs at those health centers that are likely to be impossible to access during the rainy season) and work with GRZ to incorporate findings into integrated supply chain system.

- Collaboration of USAID/Zambia’s Health and Power Africa portfolios to look at opportunities to use renewable energy sources such as solar (which is at a much lower risk from climate change) to provide power to health centers, protect cold chain delivery of drugs, etc.
5.0 CONDITIONS AND MITIGATION MEASURES

5.1 CONDITIONS
The environmental determinations in this IEE are contingent upon full implementation of the following general implementation and monitoring requirements, as well as ADS 204 and other relevant requirements.

5.1.1 During Pre-Award:

5.1.1.1 Pre-Award Briefings: As feasible, the design team and/or the cognizant environmental officer(s) (e.g., MEO, REA, BEO) will provide a pre-award briefing for potential offerors on environmental compliance expectations/responsibilities at bidders’ conferences.

5.1.1.2 Solicitations: The design team, in coordination with the A/CO, will ensure solicitations include environmental compliance requirements and evaluation criteria. A/CO will ensure technical and cost proposal requirements include approach, staffing, and budget sufficient for complying with the terms of this IEE.

5.1.1.3 Awards: The A/COR, in coordination with the A/CO, will ensure all awards and sub-awards, include environmental compliance requirements.

5.1.2 During Post-Award:

5.1.2.1 Post-Award Briefings: The A/COR and/or the cognizant environmental officer(s) (e.g., MEO, REA, BEO) will provide post-award briefings for the IP on environmental compliance responsibilities.

5.1.2.3 Workplans and Budgeting: The A/COR will ensure the IP integrates environmental compliance requirements in work plans and budgets to comply with requirements, including EMMP implementation and monitoring.

5.1.2.4 Staffing: The A/COR, in coordination with the IP, will ensure all awards have staffing capacity to implement environmental compliance requirements.

5.1.2.5 Records Management: The A/COR will maintain environmental compliance documents in the official project/activity file and upload records to the designated USAID environmental compliance database system.

5.1.2.6 Host Country Environmental Compliance: The A/COR will ensure the IP complies with applicable and appropriate host country environmental requirements unless otherwise directed in writing by USAID. However, in the case of a conflict between the host country and USAID requirements, the more stringent shall govern.

5.1.2.7 Work Plan Review: The A/COR will ensure the IP verifies, at least annually or when activities are added or modified, that activities remain with the scope of the IEE. Activities outside of the scope of the IEE cannot be implemented until the IEE is amended.

5.1.2.8 IEE Amendment: If new activities are introduced or other changes to the scope of this IEE occur, an IEE Amendment will be required.
5.1.2.14 **USAID Monitoring Oversight:** The A/COR or designee, with the support of the cognizant environmental officer(s) (e.g., MEO, REA, BEO), will ensure monitoring of compliance with established requirements (e.g., by desktop reviews, site visits, etc.).

5.1.2.16 **Environmental Compliance Mitigation and Monitoring Plan:** The A/COR will ensure the IP develops, obtains approval for, and implements Environmental Mitigation and Monitoring Plans (EMMPs) that are responsive to the stipulated environmental compliance requirements.

5.1.2.17 **Environmental Compliance Reporting:** The A/COR will ensure the IP includes environmental compliance in regular project/activity reports, using indicators as appropriate; develops and submits the Environmental Mitigation and Monitoring Reports (EMMRs); and completes and submits a Record of Compliance (RoC) describing their implementation of EMMP requirements in conjunction with the final EMMR or at the close of sub activities (as applicable). And where required by Bureaus or Missions, ensure the IP prepares a closeout plan consistent with contract documentation for A/COR review and approval that outlines responsibilities for end-of-project operation, the transition of other operational responsibilities, and final EMMR with lessons learned.

5.1.2.18 **Corrective Action:** When noncompliance or unforeseen impacts are identified, IPs notify the A/COR, place a hold on activities, take corrective action, and report on the effectiveness of corrective actions. The A/COR initiates the corrective action process and ensures the IP completes and documents their activities. Where required by Bureaus or Missions, ensure Record of Compliance is completed.

### 5.2 AGENCY CONDITIONS

5.2.1 **Sub-contract Screening:** The A/COR will ensure the IP uses an Environmental Screening Tool to screen any sub-grant applications and to aid in the development of EMMPs.

5.2.2 **Programmatic IEEs (PIEE):** PIEEs stipulate requirements for additional environmental examination of new or country specific projects/activities. The A/COR of any project/activity being implemented under a PIEE will ensure appropriate reviews are conducted, typically through a Supplemental IEE, and approved by the cognizant BEO.

5.2.3 **Supplemental IEEs (SIEEs):** An SIEE will be prepared for any new project/activity being planned which falls under a PIEE. The SIEE will provide more thorough analysis of the planned activities, additional geographic context and baseline conditions as well as specific mitigation and monitoring requirements.

5.2.4 **Other Supplemental Analyses:** The A/COR will ensure supplemental environmental analyses that are called for in the IEE are completed and documented.

5.2.5 **Resolution of Deferrals:** If a deferral of the environmental threshold determination was issued, the A/COR will ensure that the appropriate 22CFR216 environmental analysis and documentation is completed and approved by the BEO before the subject activities are implemented.

5.2.6 **Positive Determination:** If a Positive Determination threshold determination was made, the A/COR will ensure a Scoping Statement, and if required an Environmental Assessment (EA), is completed and approved by the BEO before the subject activities are implemented.

5.2.7 **Compliance with human subject research requirements:** The AM, A/COR shall assure that the IP and sub-awardees, -grantees, and -contractors demonstrate completion of all requirements for ethics review and adequate medical monitoring of human subjects who participate in research trials.
carried out through this IEE and ensure appropriate records are maintained. All documentation demonstrating completion of required review and approval of human subject trials must be in place prior to initiating any trials and cover the period of performance of the trial as described in the research protocol.

5.3 MITIGATION MEASURES

The mitigation measures presented in this section constitute the minimum required based on available information at the time of this IEE and the environmental analysis in Section 4. These measures shall provide general direction for completing the project/activity Environmental Mitigation and Monitoring Plan (EMMP) and/or the EA and PERSUAP, if required. The analysis of mitigation measures is carried out according to the seven illustrative activity classes.

The host country sectoral environmental guidelines will be used in the implementation of recommended adverse impact mitigation and monitoring measures for minimizing or preventing the occurrence of adverse impacts. The Health Team and partners are required to undertake periodic field visits to assess the performance of mitigation and monitoring measures and to identify appropriate areas of improvement.

Electronic waste

Any activities involving e-waste will propose a way of disposing of the e-waste in which there will be no damage to human health and the environment. This proposal for e-waste management must be cleared by ZEMA. Implementing partners may consult AOR/CORs for support on the ZEMA clearance process or IPs may directly approach ZEMA for clearance. If electronic devices such as computers, tablets or iPads and others are to be procured for government ministries, the benefiting ministries will have to propose environmentally friendly disposal methods approved by the GRZ.

Family Planning/ Reproductive Health and Maternal, Newborn, Child, and Adolescent Health and Nutrition (FP/RH and MNCAH-N)

Any activities involving clinical or community health service delivery (infection prevention, disposal of medical waste such as tested blood, used syringes needles, etc.), will involve strengthening community or clinical capacities to manage waste.

The Health Team will work with its implementing partners to assure, to the extent possible, that the medical facilities and operations involved have adequate procedures and capacities in place to properly handle, label, treat, store transport and properly dispose of blood, sharps, and other medical waste as articulated in Chapter 8 of the Environmental Guidelines for Small Scale Activities in Africa’s ‘Minimum Elements of a Complete Waste Management Program.’

This condition is discussed in greater detail in Annex 1.

HIV/AIDS and TB

Any activities involving clinical or community health service delivery (infection prevention, disposal of medical waste such as tested blood, used syringes needles, etc.), will involve strengthening community or clinical capacities to manage waste.

The Health Team will work with its implementing partners to assure, to the extent possible, that the medical facilities and operations involved have adequate procedures and capacities in place to properly handle, label, treat, store transport and properly dispose of blood, sharps, and other medical waste as
articulated in Chapter 8 of the Environmental Guidelines for Small Scale Activities in Africa’s ‘Minimum Elements of a Complete Waste Management Program.’

This condition is discussed in greater detail in Annex 1.

**Malaria**

Activities promoting the distribution and/or use or medical commodities and equipment must do so in a manner that aligns with appropriate management of those products, including proper disposal. To that end, BCC activities must be consistent with IEE conditions established for commodity distribution and use. This includes, but is not limited to, assuring that behavior change activities include, as appropriate, messages that emphasize the proper storage, use, and disposal of these products.

The Health Team will work with its implementing partners to assure, to the extent possible, that the medical facilities and operations involved have adequate procedures and capacities in place to properly handle, label, treat, store transport and properly dispose of blood, sharps, and other medical waste as articulated in Chapter 8 of the Environmental Guidelines for Small Scale Activities in Africa’s ‘Minimum Elements of a Complete Waste Management Program.

This condition is discussed in greater detail in Annex 1.

IP(s) is/are required to purchase and use only WHO-approved brands of ITNs. Make all appropriate efforts to assure that the packaging, storage, transport and disposal of ITNs, comply with the WHO Pesticide Evaluation Scheme guidelines, and of USAID. ITN programming will also comply with environmental mitigation and monitoring criteria and all other applicable conditions and/or requirements specified in the USAID Malaria Vector Control (MVC) Programmatic Environmental Assessment (PEA).

Behavior change communication campaigns will address proper use of mosquito nets, acceptable repurposing, unacceptable repurposing, and proper disposal. Strategies for preventing and addressing fishing with ITNs should be addressed by EMMPs to ensure protection of water and food systems.

All activities that include potential use of pesticides shall conform to the USAID/Zambia Umbrella Pesticide Evaluation Report and Safe Use Action Plan (PERSUAP). USAID/Zambia ensures meeting environmental compliance criteria prior to conducting indoor residual spraying for management of malaria. These environmental compliance activities include:

- Inspection of the environmental conformity of IRS sites (soak pits, storage rooms, etc.) before the campaign and ensure that two other inspections are carried out (one pre- and the other mid-campaign are planned);
- Ensuring that an environmental mitigation and monitoring plan is adhered to during IRS campaign;
- Ensuring the personal safety of the spray personnel through proper use of personal protective equipment (PPE) and compliance with standard operating procedures; and
- Ensuring that the environmental and community impact during and after the IRS campaign are minimized through effective IEC and proper stock management of insecticide.

Inspections and the resultant recommendations for improvements and remediation of sub-standard conditions and facilities must be completed prior to the initiation of spray activities. Disposal of leftover or expired insecticides and the insecticide containers will be conducted in compliance with Zambia Environmental Management Agency (ZEMA) regulations and specifications, using standard procedures. Each district health center owns and operates an incinerator, and these are made available to the Ministry of Health for the destruction of pesticide-contaminated wastes. ZEMA representatives oversee the destruction of the pesticides to assure proper operation of the incinerators during the process. The Mission also finalized a Supplemental Environmental Assessment (SEA) to proceed with IRS operations in all districts of Zambia, using pyrethroids, carbamates, and organophosphates as needed from 2015-2020. The SEA will be updated every five years for the duration of the PMI IRS program in Zambia. Promotion
of insecticide-treated mosquito nets and other integrated vector management programs, require further
details on if, how and which pesticides may be used, and more details on any potential pest management
component. On a routine basis, USAID participates in an Insecticide Resistance Technical Working
Group which has been meeting since 2010. This group includes local entomologists as well as experts
from CDC and the Liverpool School of Tropical Medicine and Hygiene. At the meeting, the group
decides on which insecticides to use in the IRS season based on evidence of insecticide resistance.
USAID also conducts environmental compliance inspections, in collaboration with partners.

Construction

All construction activities will be conducted in an environmentally friendly manner consistent with: the

USAID Environmental Procedures and host country requirements

Small-scale construction refers to any individual building that does not exceed 10,000 square feet
(1000m²) of construction. Any construction works exceeding this scale require more rigorous
consideration and mitigation. USAID constructed facilities, structures, and infrastructure must be
designed and constructed to appropriate engineering standards to minimize risk to humans and the
natural environment. Burnt bricks contribute to deforestation and any construction should use
alternatives such as compressed soil brick and stabilized soil blocks that require very little or no energy
to manufacture.

Construction of sanitation units should follow laid down environmental guidelines including the
approved PERSUAP for Zambia. According to the approved 2013 Umbrella PERSUAP, Pesticide
Alchlorpyrifos-ethyl is no longer EPA registered for use on structures where children are present and is
therefore a Rejected Wood Preservative. Creosote (RUP) should also not be used and the IP should
instead construct from cement and metal. Treated timber should not be used for foundation, framing or
walls.

Additionally, small-scale renovation/ refurbishment and expansion of facilities delivering healthcare
services, serving as diagnostic laboratories, or providing practical or lab-based health training must
adhere to the below measures:

- The formal AFR subproject/subgrant review process, as set out by the AFR Environmental
  Review Form (found here: http://www.usaidgems.org/compliance.htm) must be completed and
  approved by the COR/AOR, MEO and REA prior to construction.*
- The IP must assure implementation of any mitigation and monitoring conditions specified by the
  approved ERF; and,
- The environmental management conditions established by the ERF process must be consistent
  with the conditions for “very small scale construction” enumerated immediately above and, at
  minimum, consistent with achieving a “no issues” result under application of the ENCAP Visual
  Construction_22Dec2011.pdf)
- Where water supplies for drinking or washing patients or laundry are upgraded or provided,
  measures will be taken to ensure that drainage from laundry and bathing facilities does not affect
  the water supply nor pose threats for transmittal of infectious diseases. The conditions applying
to water supplies will also be observed.
• Waste handling equipment and infrastructure. An end result of USAID intervention must be that facilities will possess adequate infrastructure and equipment to appropriately handle the healthcare, human and general wastes they may generate per WHO requirements. The conditions applying to sanitation infrastructure apply to sanitation interventions undertaken with such construction.

• No complicating factors. The site is not within 30m of a permanent or seasonal stream or water body; will NOT involve displacement of existing settlement/inhabitants; has an average slope of less than five percent and is not heavily forested; and is in an otherwise undisturbed local ecosystem, or protected area. Sites not meeting one or more of these criteria are subject to the determinations and conditions for construction with a total surface area disturbed of 1000 m² OR MORE, as described in the following activity threshold determination.

At a minimum, (1) During construction, prevent sediment-heavy run-off from cleared site or material stockpiles to any surface waters or fields with berms, by covering sand/dirt piles, or by choice of location (Only applies if construction occurs during rainy season); (2) Construction must be managed so that no standing water on the site persists more than 4 days; (3) Implement erosion control methods during-construction and revegetate around the construction site to prevent erosion once construction is complete; (4) Require general contractor to certify that it is not extracting fill, sand or gravel from waterways or ecologically sensitive areas, nor is it knowingly purchasing these materials from vendors who do so; (5) Identify and implement any feasible measures to increase the probability that timber is procured from legal, well-managed sources; and, (6) Conduct community and worker sensitization meetings related to reducing the social / cultural impact of construction on a community via adverse social behaviors, avoiding the disruption of cultural sites, noise minimization, and decreasing the spread of communicable diseases.

1. Asbestos. If the presence of Asbestos is suspected in a facility to be renovated, the facility must be tested for asbestos before rehabilitation works begin. Should asbestos be present, then the work must be carried out in conformity with host country requirements, (if any) and in conformity with guidance to be provided by the MEO, in consultation with the REA and BEO. All results of the testing for asbestos shall be communicated to the C/AOR.

2. Paint. No lead-based paint shall be used, when lead-free paint is used, it will be stored properly to avoid accidental spills or consumption by children; empty cans will be disposed of in an environmentally safe manner away from areas where contamination of water sources might occur; and the empty cans will be broken or punctured so that they cannot be reused as drinking or food containers.

3. Water supplies. Where water supplies for drinking or other uses are upgraded or provided, good-practice design standards must be implemented for new construction and rehabilitation works, generally consistent with USAID’s Sector Environmental Guidelines: Water Supply & Sanitation: http://www.usaidgems.org/Sectors/watsan.htm. These standards must be specified in the EMMP.

For water supply, they must include siting of new wells well away from groundwater contamination sources (e.g. latrines, cesspits, and dumps), exclusion of livestock from water points, and prevention of standing water at water supply points. A water quality assurance plan (WQAP) should specify how the IP will assure safe drinking water for the project and meet applicable partner-country water quality requirements given project implementation conditions. Development of the WQAP must be generally consistent with the USAID WQAP Template: http://www.usaidgems.org/wqap.htm. Standards set in the WQAP must be specified in the
EMMP. Capacity-building in equipment/system maintenance must be co-programmed with construction/installation of small-scale water supply and sanitation infrastructure.

4. Waste handling equipment and infrastructure. USAID interventions must result in the facilities’ possessing adequate provision for handling the wastes they may generate; including human wastes. Sanitation facilities must be implemented with good-practice design standards for new construction and rehabilitation works, generally consistent with USAID Sector Environmental Guidelines: Water Supply and Sanitation: [http://www.usaidgems.org/Sectors/watsan.htm](http://www.usaidgems.org/Sectors/watsan.htm). These standards must be specified in the EMMP.

For latrines, they must include provisions to prevent contamination of water supplies, appropriate choice of latrine type given local environmental conditions (e.g. pit latrines are rarely suitable in locations where the water table is high), provision of hand wash stations, and development and implementation of a system for ongoing latrine cleaning and maintenance. Capacity-building in equipment/system maintenance must be co-programmed with construction/installation of small-scale sanitation infrastructure.

For non-human waste, waste management will be undertaken in a manner generally consistent with the guidance for environmentally sound waste management, provided in the Solid Waste chapter of the USAID Sector Environmental Guidelines ([http://www.usaidgems.org/sectorGuidelines.htm](http://www.usaidgems.org/sectorGuidelines.htm)). This guidance covers both municipal solid waste generation (organics, plastics, recyclables, etc.) and construction waste.

Construction waste entails old construction materials, logs, and debris. Construction waste must not be stored or allowed to migrate outside of the designated construction site. This waste must be cordoned off as it is a safety hazard. No construction waste can be left on site once construction is complete. The IP shall be required to de-construct rather than demolish construction waste as it will be more easily separated for disposal or reuse. The contractor shall de-construct and separate at the source, not at the disposal site. Mixing of deconstructed waste types or the blending of them with soil should not occur as this may render different types of waste unrecognizable. Criteria should be established to create an approved disposal site, i.e. avoid wetlands, floodplains, farmland, etc. If waste products will be repurposed, the product origin must be known to avoid inappropriate use.


SOLAR

The Sector Environmental Guidelines (SEG) for Small-Scale Energy refer to energy projects such as solar, wind small hydropower, geothermal, bioenergy and fossil fuels. The Chapter outlines various environmental best practices to follow, including environmental impacts and mitigation measures to consider when such projects are planned and designed. The Health Office team, together with the IP, shall ensure that all small-scale energy projects are conducted in a manner consistent with best practices contained in this SEG, host country environmental requirements and USAID Environmental Procedures.

The partner will need to ensure that defective or old batteries are properly handled and disposed of via a properly established channel, which will include disposal of batteries in accordance with Zambian law.
The partner will need to complete an annual Environmental Mitigation and Monitoring Report (EMMR) citing compliance with mitigation requirements.

From initiation, the project should recommend appropriate disposal strategies that will inform users on proper handling/operating procedures. For example, batteries must not be opened or drained, and the lead must be prevented from entering the environment. While the use of solar panels can provide ideal energy solutions, their use does generate electronic wastes, including potentially harmful lead-acid battery wastes that need to be disposed of properly when used inverters and batteries need to be replaced by new ones. Improper handling of panels or batteries can lead to environmental contamination.

Specifically, the following:

- Small-scale PV systems should be constructed on household or building roofs when possible. (C, P&D)
- Refer to the USAID Sector Environmental Guideline for Construction for guidance on mitigation of environmental impacts associated with these aspects of solar energy projects.
- Develop and assess waste management and disposal plans with vendors and end users at the concept and design stage. (P&D)
- Ensure old PV batteries are separated from other solid wastes and disposed of with other hazardous waste materials, e.g., paints and toxic chemicals. The waste management plan should account for all such potentially hazardous wastes in full. (P&D, O&M, DCM)
- Cement seals can be used to separate and protect surrounding rock, soil, and groundwater. (C)
- New wells should be a safe distance from already existing wells to avoid changes in pressure gradients that could affect existing wells. (P&D, C)
- When possible and cost efficient, vendor solicitations and awards should provide source/origin provisions that demonstrate due diligence in mining and processing of the metals and raw materials used in the manufacture of PV systems. (P&D)
- Proper mitigation measures include procurement provisions requiring recycling used chemicals, taking appropriate precautions during manufacturing (wearing personal protective equipment, etc.), and proper project siting and design. (P&D, C, O&M)
- To minimize environmental impacts related to production, thinner cell layers and safer and more efficient production materials should be explored. (P&D)
- Proper installation and positioning (out of easy reach) of solar systems with theft-proof hardware, battery cages with mesh and secure mounts. (P&D, C)
- For community systems (or at hospitals, schools, etc.), community involvement and/or hiring a guard to protect the equipment can be effective. (O&M)
- Train solar panel operators and maintenance works on theft prevention measures and strategies. (O&M)

**Health Systems Strengthening (governance, financing, information systems, etc.)**

These activities will not have a direct effect on the environment. However, there are qualifications pertinent to these activities; e.g., if any topic associated with these activities is one that inherently affects the environment, such as training in HIV/AIDS testing that involves use and disposal of medical waste, or training related to malaria prevention then such training will include information on how to minimize and/or mitigate these impacts. Examples include, instruction on safe disposal of sharps and biological samples generated from HIV/AIDS testing or training in proper household behaviors to minimize exposure during indoor residual spraying campaigns and proper use of insecticide-treated materials like bed nets.
In the instance of negative environmental effects, refer to information on mitigation for other illustrative activity classes as appropriate such as RMNCAH/N, HIV/AIDS and TB, and Malaria.

**Monitoring and Evaluation, Research/Implementation Science**

These activities will not have a direct effect on the environment. However, there are qualifications pertinent to these activities; e.g., if any topic associated with these activities is one that inherently affects the environment, such as training in HIV/AIDS testing that involves use and disposal of medical waste, or training related to malaria prevention then such training will include information on how to minimize and/or mitigate these impacts. Examples include, instruction on safe disposal of sharps and biological samples generated from HIV/AIDS testing or training in proper household behaviors to minimize exposure during indoor residual spraying campaigns and proper use of insecticide-treated materials like bed nets.

In the instance of negative environmental effects, refer to information on mitigation for other illustrative activity classes as appropriate such as RMNCAH/N, HIV/AIDS and TB, and Malaria.

**Commodities and Logistics**

Appropriate end-of-life management must be assured. Otherwise, and in all cases, implementing partners conducting activities involving procurement, storage, management and/or disposal of public health commodities, including pharmaceutical drugs, immunizations and nutritional supplements, must ensure, to the greatest extent practicable, that they and/or the medical facilities and operations involved, as appropriate, have adequate procedures and capacities in place to properly manage and dispose of such commodities.

Consignees for any pharmaceutical drugs procured under these activities must be advised: (1) to store the product according to the information provided on the manufacturer's Materials Safety Data Sheet (MSDS); (2) that, if disposal is required due to expiration or any other reason, the preferred method of disposal is to return to the manufacturer. If that is not possible, then the preferred disposal method is as per the WHO Guidelines for Safe Disposal of Unwanted Pharmaceuticals. (www.who.int/water_sanitation_health/medicalwaste/unwantpharm.pdf) Mandatory references for “appropriate end of life management”: WHO Guidelines for Safe Disposal of Unwanted Pharmaceuticals. www.who.int/water_sanitation_health/medicalwaste/unwantpharm.pdf “Healthcare Waste” chapter, USAID Sector Environmental Guidelines lines www.usaidgems.org/Sectors/healthcareWaste.htm.

IP(s) is/are required to purchase and use only WHO-approved brands ITNs. Make all appropriate efforts to assure that the packaging, storage, transport and disposal of ITNs, comply with the WHO Pesticide Evaluation Scheme guidelines, and of USAID. ITN programming will also comply with environmental mitigation and monitoring criteria and all other applicable conditions and/or requirements specified in the USAID Malaria Vector Control (MVC) Programmatic Environmental Assessment (PEA). 29

All efforts to strengthen health commodity supply chains, including storage infrastructure, must address and take all practicable efforts to assure that adequate facilities, procedures and capacities are in place to properly manage expired, used, obsolete or surplus commodities and/or that plans and strategies incorporate and provide for such management. In any instance that a USAID project controls commodities at end-of-life, appropriate end-of-life management must be assured.

All activities involving condom procurement, storage, distribution and use should have relevant and appropriate protocols in place to educate and disseminate best practices in handling the commodity with respect to expiration dates, appropriate storage conditions and safe disposal after use.

**Government to Government**

The Grantee will provide, and USAID will approve, an Environmental plan to cover all activities under the activity. The environmental plan will detail the respective Government Ministry’s approach to ensuring that the activities under this implementation letter comply with the Zambian environmental laws, regulations and policies; and how much activities will be carried in an appropriate sanitary and hygienic manner.

**TABLE 4: SUMMARY OF POTENTIAL IMPACTS AND MITIGATION MEASURES**

<table>
<thead>
<tr>
<th>Issue or aspect activity</th>
<th>Impact</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Issue 1: Commodities and Logistics.</td>
<td>Release toxic pollutants into the air, and inefficient and insecure sorting and disposal may allow commodities beyond their expiry date to be diverted for resale to the general Public. Electronic Waste</td>
<td>• The project’s medical facilities and operations involved with have adequate operating procedures and capacities in place to properly manage and dispose of hospital waste including incineration, autoclaving laboratory&lt;br&gt;• waste, disposal hazardous materials, and incineration of expired Medicines.&lt;br&gt;• Commodities procured will be stored according to the information provided on the manufacturer’s Materials Safety Data Sheets.&lt;br&gt;• Pharmaceuticals will be utilized in an order that dispenses first those with closest expiry dates.&lt;br&gt;• Disposal of public health commodities will be treated using the guidelines provided in the Sector Environmental Guidelines - Healthcare Waste (USAID2014) (CP,O&amp;M)&lt;br&gt;• Proposal of e-waste management to be approved by ZEMA and proper implementation of e-waste management proposal&lt;br&gt;• Proper public health waste management and compliance to PERSUAP</td>
</tr>
<tr>
<td>Issue 2: Management and Disposal of Medical Waste.</td>
<td>Spread disease via failure to (1) sterilize infectious waste and/or (2) prevent access to waste by waste pickers or disease vectors.&lt;br&gt;<strong>Pharmaceutical waste</strong> may accumulate due to inadequacies in stock management and distribution.</td>
<td>• Hospital waste is separated, at source - separating sharps, and infected wastes and other hazardous materials for high temperature incineration, paper and plastics for re-cycling, and vegetable wastes for compost.&lt;br&gt;• The laboratories will autoclave (if possible) any bacterial culture equipment before</td>
</tr>
</tbody>
</table>
and lack of a routine system of disposal.

Exposure local community to health risks via unsafe disposal of materials containing toxins that may affect human reproduction and, or infant development. Contaminate water supplies (ground and/or surface) via improper land disposal. (May also damage local ecosystems, animals or plants).

either disposing of it in separate hazardous material or reutilizing it for further cultures.

- The incineration system and the other waste disposal are sited so as not to contaminate water supplies and not subject to flooding.
- Proper medical waste management and infection control
- Environmental management plan including noise and dust management

| Issue 3: Construction and Solar | Contaminate soil, groundwater water or surface water, worker injury. Site clearing /leveling potential cause of erosion, siltation due to demolition of existing structures, and debris from demolition activities. Generation of soil from extraction activities; short-term dust pollution; potential for moderate impact to the nearby environment and ecosystem e.g. contamination of water supplies, since these construction works require some digging; and potential for undesirable social impacts due to emissions from operation of waste management pit. | Dust and noise control measures to be in place during construction and monitored and designing of infrastructure so that it creates least impact. | Compliance to USAID Small-Scale Construction Sector Guidelines
- Waste management plan, waste disposed of at local landfills designated by GRZ
- Appropriate Health and safety measures put in place according to the Zambian law/International standards |

| Issue 4: Health Systems Strengthening | Generate electronic waste from information technology equipment. | Proposal of e-waste management to be approved by ZEMA and proper implementation of e-waste management proposal |

| Issue 5: HIV/AIDS and TB | Generate medical waste and cross contamination. Cause patient-to-healthcare worker and patient-to-patient TB infection | Proper medical waste management and infection control |

| Issue 6: Malaria | Generate medical waste, cross contamination and electronic waste | Proper medical waste management and infection control
- Proposal of e-waste management to be approved by ZEMA and proper implementation of e-waste management proposal
- Compliance to PERSUAP and prevention of pesticide pilferage |
6.0 LIMITATIONS OF THIS INITIAL ENVIRONMENTAL EXAMINATION

The determinations recommended in this document apply only to projects/activities and sub-activities described herein. Other projects/activities that may arise must be documented in a separate IEE, an IEE amendment or memorandum to the file if the activities are within the same project/activity or other type of environmental compliance document and shall be subject to an environmental analysis within the appropriate documents listed above.

Other than projects/activities determined to have a Positive Threshold Determination, it is confirmed that the projects/activities described herein do not involve actions normally having a significant effect on the environment, including those described in 22CFR216.2(d).

In addition, other than projects/activities determined to have a Positive Threshold Determination and/or a pesticide management plan (PERSUAP), it is confirmed that the projects/activities described herein do not involve any actions listed below. Any of the following actions would require additional environmental analyses and environmental determinations:

- Support project preparation, project feasibility studies, or engineering design for activities listed in §216.2(d)(1);
- Affect endangered and threatened species or their critical habitats per §216.5, FAA 118, FAA 119;
- Provide support to extractive industries (e.g. mining and quarrying) per FAA 117;
- Promote timber harvesting per FAA 117 and 118;
- Lead to new construction, reconstruction, rehabilitation, or renovation work per §216.2(b)(1);
- Support agro-processing or industrial enterprises per §216.1(b)(4);
- Provide support for regulatory permitting per §216.1(b)(2);
- Lead to privatization of industrial facilities or infrastructure with heavily polluted property per §216.1(b)(4);
- Procure or use genetically engineered organisms per §216.1(b)(1); and/or
- Assist the procurement (including payment in kind, donations, guarantees of credit) or use (including handling, transport, fuel for transport, storage, mixing, loading, application, clean-up of spray equipment, and disposal) of pesticides or activities involving procurement, transport, use, storage, or disposal of toxic materials. Pesticides cover all insecticides, fungicides, rodenticides, etc. covered under the Federal Insecticide, Fungicide, and Rodenticide Act per §216.2(e) and §216.3(b).

7.0 REVISIONS

Per 22CFR216.3 (a) (9), when ongoing programs are revised to incorporate a change in scope or nature, a determination will be made as to whether such change may have an environmental impact not previously assessed. If so, this IEE will be amended to cover the changes. Per ADS 204, it is the responsibility of the USAID A/COR to keep the MEO/REA and BEO informed of any new information or changes in the activity that might require revision of this environmental analysis and environmental determination.
ATTACHMENTS:

3. Annex 3. Available Resources
ANNEX 1
The following is an excerpt from the “Healthcare Waste” Chapter of the USAID Bureau for Africa’s “Environmental Guidelines for Small Scale Activities in Sub-Saharan Africa.” See: http://www.usaidgems.org/sectorguidelines.htm

1. MINIMUM ELEMENTS OF A COMPLETE WASTE MANAGEMENT PROGRAM
Small-scale facilities require a sound healthcare waste management system to minimize adverse health and environmental impacts caused by their wastes. A comprehensive minimal program to manage healthcare wastes includes the following practices:

- **A written waste management plan** should describe all of the practices for handling, storing, treating, and disposing of hazardous and non-hazardous waste, as well as types of worker training required. This plan is usually drawn up after doing a comprehensive assessment of waste handling at the facility.

- **Staff responsibilities should be clearly assigned** to make workers feel accountable for how well tasks are completed and ensure that no step in the process is overlooked.

- **Formalized rules for generation, handling, storage, treatment, and disposal must be maintained.**

- **Training in safe handling, storage, treatment, and disposal** will ensure that staff are aware of all hazards they might encounter and that they are practicing good hygiene, safely handling sharps, properly using of protective clothing, and safely packaging, labeling, and sorting waste, and safe storage of waste. Training helps ensure correct response to spills and prevents staff, patients, and visitors from exposure and injury. Untrained workers handle wastes in ways that endanger themselves and the local community.

- **Protective clothing** – surgical masks, gloves, aprons, and boots – should be readily available to protect workers when moving and treating various types of collected infectious waste.

- **Good hygiene practices prevent worker sickness.** Many infectious agents must enter the mouth or be swallowed to cause disease. Even if protective clothing is worn, some organisms will get on workers’ hands and faces. Workers should wash their hands and faces regularly with soap and warm water. They get sick more often when they do not observe good hygiene practices.

- **Workers should be vaccinated** against potentially deadly viral hepatitis B and tetanus infections.

- **Temporary storage containers in designated locations should be used** to store hazardous waste for short periods (only)—less than 24 hours in warm climates. Also, hazardous wastes should be put in a labeled, covered container in a fixed location away from patients or food.

- **Minimization, reuse, and recycling procedures** ensure that less waste generated so there is less waste to manage. Unnecessary disposal of valuable chemicals and pharmaceuticals can be avoided through good inventory practices – using the oldest batch first, never opening a new container before the last one is finished, preventing products from being thrown out during
routine cleaning, and checking on delivery to make sure materials are not about to expire. Where possible and safe, use reusable syringes and needles. This generates less waste (approximately 0.5–2% of disposables), and costs 5 to 15 times less. Minimize use of products containing PVC plastics. Competitively priced substitutes for PVC plastic are available that perform equally well.

- **A waste segregation system** (sorting and separating) reduces the volume of waste and enables different kinds of materials to be handled appropriately. Approximately two-thirds of waste from small-scale facilities is general waste. Separating hazardous waste from general waste reduces the amount that must be treated by 75–90%. The dangers of sharps waste can be minimized when sharps are collected in separate puncture-proof containers. Other elements that can be segregated for separate handling, treatment, and/or disposal include hazardous liquids, chemicals, pharmaceuticals, PVC plastic, and materials containing heavy metals.

- **Treatments for hazardous and highly hazardous waste** available to small-scale facilities are limited (see table 3.2 for details). High concentrations of infectious agents make these wastes dangerous, and the risks associated with current methods for managing healthcare waste exist because little is done to reduce concentrations before disposal. The most important function of treatment is disinfection. For rural facilities, burning in the open air in single-chamber incinerator, drum, or brick incinerator, preferably combined with good waste segregation practices, is the recommended option. Because the air pollution produced by burning poses a much greater hazard in urban areas, autoclaving of infectious waste combined with encapsulation of sharps may be the best option for urban facilities. If a larger nearby hospital with more advanced treatment and disposal systems is located nearby, small facilities could investigate piggy-backing on those systems, although precautions will need to be taken to reduce risks associated with transporting the waste.

- **A final disposal site must be available** where residues from treated waste and waste that cannot be treated can be disposed of properly. Small-scale facilities should bury waste on site, ideally in a pit lined with clay or a similarly impermeable material to prevent contamination of groundwater. Most urban facilities lack adequate space for on-site burial, and disposal in a public landfill may be the only option. Precautions must be taken when disposing waste in a public landfill to protect handlers and waste-pickers from infection. Sharps should be encapsulated to prevent accidental sticks and recovery for intentional reuse.

- **A schedule for periodic review of adherence to the plan and effectiveness of the plan** must be established for regular follow-up to ensure planned practices are in place, are being carried out correctly, and are actually minimizing risk, damage and disease. Maintenance of good waste management practices is a process of continuous improvement.

For additional information on designing and operating waste management programs, please refer to the Environmental Mitigation and Monitoring Guidelines section of the *Solid Waste Sector Environmental Guideline*. 
ANNEX 2

1. Family Planning/ Reproductive Health and Maternal, Newborn, Child, and Adolescent Health and Nutrition (RMNCAH/N)

Mission-originated mechanisms:

• Community Radio Program to Improve the Health of Women and Children
• Early Childhood Development Zambia
• RMNCAH/N TA Activity
• Safe Motherhood 360+
• Sexual and Reproductive Health Access for All Initiative (SARAI)
• Scaling Up Nutrition Learning and Evaluation (SUN LE)
• Scaling Up Nutrition Technical Assistance (SUN TA)
• USAID Systems for Better Health (SBH)
• USAID Health Integrated Infrastructure Design Activity

Field support, central buy-in mechanisms, and other non-government-to-government mechanisms:

• BREAKTHROUGH-Action
• Integrated Management of Childhood Illnesses (IMCI) National Evaluation and Strategic Plan
• Maternal and Child Survival Project (MCSP)
• Swedish International Development Cooperation Agency (Sida)/USAID Continuum of Care Activity
• Support for International Family Planning & Health Organizations II: Sustainable Networks (SIFPO2/PSI)

Government-to-Government mechanisms:

• Health Improvement Partnership Project

2. Malaria

Mission-originated mechanisms:

• USAID Program for the Advancement of Malaria Outcomes (USAID PAMO)

Field support, central buy-in mechanisms, and other non-government-to-government mechanisms:

• Advancing Progress in Malaria Service Delivery
• Malaria Environmental Compliance
• Vectorlink

3. HIV/AIDS and TB

Mission-originated mechanisms:

• AIDSFree
• eSCMIS
• Eradicate TB (ETB)
• New Vulnerable Children and Adolescents Service Delivery Activity
• New Vulnerable Children and Adolescents Technical Assistance Activity
• Stop Gender-Based Violence (Stop GBV II)
• USAID/District Coverage of Health Services Project (DISCOVER-H)
• USAID Open Doors
• USAID/PEPFAR Securing an AIDS Free Era (SAFE)
• USAID/Zambia Community HIV Prevention Project (Z-CHPP)
• USAID Zambia Family (ZAMFAM) Copperbelt Lusaka
• USAID Zambia Family (ZAMFAM) South Central

Field support, central buy-in mechanisms, and other non-government-to-government mechanisms:
• Challenge TB
• EQUIP Consortium/ Zambia (EQUIP)
• Service Efficiency and Effectiveness for Vulnerable Children and Adolescents program (SEEVCA)
• University Teaching Hospital (UTH) Health Access to All

Government-to-Government mechanisms:
Health Improvement Partnership Project

4. Construction and Solar

Mission-originated mechanisms:
• Eradicate TB (ETB)
• USAID/District Coverage of Health Services Project (DISCOVER-H)
• USAID/PEPFAR Securing an AIDS Free Era (SAFE)
• USAID Health Integrated Infrastructure Design Activity (UHIIDA)

Field support, central buy-in mechanisms, and other non-government-to-government mechanisms:
• Challenge TB
• EQUIP Consortium/ Zambia (EQUIP)
• Global Health Supply Chain – Procurement and Supply Management (GHSC-PSM)
• University Teaching Hospital (UTH) Health Access to All

5. Health Systems Strengthening (Governance, financing, information systems, etc.)

Mission-originated mechanisms:
• AIDSFree
• eSCMIS
• Accountable Governance for Improved Service Delivery (AGIS)
• USAID Systems for Better Health (SBH)
• Community Health Assistant (CHA) Support Activity

Government-to-Government mechanisms:
• Health Improvement Partnership Project (HIPP)
6. Monitoring and Evaluation, Research/Implementation Science

Mission-originated mechanisms:
- Scaling Up Nutrition Learning and Evaluation (SUN LE)
- Evidence for Health (E4H)

Field support, central buy-in mechanisms, and other non-government-to-government mechanisms:
- Integrated Management of Childhood Illnesses (IMCI) National Evaluation and Strategic Plan
- Inter-agency Agreement with U.S. Census Bureau (IAA with U.S. Census Bureau)
- MEASURE DHS
- Policy, Advocacy and Communication Enhanced for Population and Reproductive Health (PACE)

7. Commodities and Logistics

Mission-originated mechanisms:
- AIDSFree ZAMBIA
- eSCMIS

Field support, central buy-in mechanisms, and other non-government-to-government mechanisms:
- Global Health Supply Chain – Procurement and Supply Management (GHSC-PSM)
ANNEX 3. AVAILABLE RESOURCES

1) Global Environmental Management Portal
   https://sites.google.com/a/usaid.gov/ghguidance/

2) Construction guidelines

3) USAID climate change management
   https://www.climatelinks.org/climate-risk-management

4) Integrated Waste Management Plan
   https://sites.google.com/a/usaid.gov/reg-216-templates/iwmp

5) Environmental Mitigation and Monitoring Plan (EMMP)
   https://sites.google.com/a/usaid.gov/reg-216-templates/emmp

6) Environmental Mitigation and Monitoring Report (EMMR)
   https://sites.google.com/a/usaid.gov/reg-216-templates/emmr

7) Corrective Action Plan (CAP)
   https://sites.google.com/a/usaid.gov/reg-216-templates/cap

8) Record of Compliance (ROC)
   https://sites.google.com/a/usaid.gov/reg-216-templates/roc