**Project Information:**

<table>
<thead>
<tr>
<th>Activity/Project Title:</th>
<th>The World Vegetable Center (AVRDC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contract/Award Number (if known):</td>
<td>AID-BFS-I0-12-000</td>
</tr>
<tr>
<td>Geographic Location:</td>
<td>Global</td>
</tr>
<tr>
<td>Is this an Amendment to an existing IEE?</td>
<td>Yes, and this will be Amendment #: 1</td>
</tr>
<tr>
<td>Original IEE Tracking #:</td>
<td>not numbered</td>
</tr>
<tr>
<td>BEO Approval Date:</td>
<td>9/23/2014</td>
</tr>
<tr>
<td>Title of Original document:</td>
<td>IEE for AVRDC</td>
</tr>
<tr>
<td>Funding:</td>
<td>$32,889,066</td>
</tr>
<tr>
<td>Implementation Start/End:</td>
<td>9/30/2012-9/30/2019</td>
</tr>
<tr>
<td>Expiration Date (if any):</td>
<td></td>
</tr>
<tr>
<td>Prepared By:</td>
<td>Ahmed Kablan</td>
</tr>
<tr>
<td>BFS Office:</td>
<td>ARP</td>
</tr>
<tr>
<td>Date Prepared:</td>
<td>02/16/2017</td>
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</table>

**Recommended Threshold Determination:**

- **X** Negative Determination with Conditions
- **X** Categorical Exclusion [include rationale per 216.2(c)]
- _ Positive Determination [see 216.3(2)(iii)]
- _ Exemption [include rationale per 216.2(b)]
- _ Deferral [include rationale per 216.3(a)(1)(iii)]

**Guidance:**

This Document: The purpose of the Initial Environmental Examination, 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 described activity, and to recommend determinations and, as appropriate, conditions, for these activities. Upon final approval of this IEE, these recommended determinations are affirmed as 22 CFR 216 Threshold Decisions and Categorical Exclusions, and conditions become mandatory elements of implementation. This IEE is a critical element of a mandatory environmental review and compliance process meant to achieve environmentally sound activity design and implementation.

**IEE SUMMARY:**

This amendment adjusts project dates:
- From: September 2012 - September 2017;
- To: September 2014 - September 2019.

The original IEE was signed on 9/23/2014.
This IEE will now be valid till 9/30/2019.
All other conditions and activities are unchanged.
APPROVAL OF ENVIRONMENTAL ACTION RECOMMENDED:

CLEARANCE:
Office Director: Sheila Roquille Date: 4/24/2017
Activity Manager: Ahmed Kablan Date: 02/16/2017
Activity AOR: John Bowman Date: 4/18/17

CONCURRENCE:
BFS Bureau Environmental Officer: Date: 4-24-2017
William Thomas

BFS Tracking #: BFS-17-3-004
Initial Environmental Examination (IEE)

Program/Activity Data
Program/Project Title: The World Vegetable Center (AVRDC)
Program/Project Number: AID-BFS-IO-12-000; Activity Number
Project Country (ies): Worldwide
Funding Period: FY 2014 – FY 2019
Life of Activity Funding
  Core Component $5,000,000
  Post-Harvest Component: $5,000,000
  BFS/Other Bureaus/Missions buy-in: $5,000,000

I. Background and Activity/Program Description
i. Purpose and Scope of IEE
This IEE covers USAID’s funding support to The World Vegetable Center (AVRDC).

ii. Background
AVRDC – The World Vegetable Center, founded in 1971, is an international nonprofit institute for vegetable research and development. The Center effectively mobilizes resources from the public and private sectors to foster the safe production of nutritious and health-promoting vegetables in developing countries. AVRDC’s improved varieties and production methods help farmers increase vegetable harvests, raise incomes in poor rural and urban households, create jobs, and provide healthier, more nutritious diets for families and communities.

iii. Description of Activities

II. Country and Environmental Information

i. Locations Affected
The work will focus on selected Feed the Future countries in Africa and South East Asia (mainly Bangladesh; Cambodia; Nepal and Tanzania). The largest impact of AVRDC activities occurs particularly within rural areas of these countries. The development of improved seed varieties, techniques and technologies may have spillover effects through their adoption in developed countries as well.

III. Evaluation of Environmental Impact Potential
The following table includes the recommended determinations for each class of activity associated with The World Vegetable Center (AVRDC). For any project/research activity not covered under these conditions should be subjected to environmental evaluation/assessment under sub-project review.
<table>
<thead>
<tr>
<th>Activity</th>
<th>Recommended Determination</th>
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</table>
| 1. Research and analysis of technologies, markets and systems, local and national capacity building, which includes trainings, workshops and technical assistance, development of training packages and documentation, Nutrition messaging; Post harvest-course training; Assessment of intervention points to improve postharvest quality; Assessment of in-country vegetable value chains; Development of linkages with local partners and interest groups; Development of a high level of information exchange with USAID horticulture value chain projects; Monitor nutritional content of selected vegetables along the value chains to ensure delivery of quality; Awareness raising activities | Categorical Exclusion, per  
- 22 CFR 216.2(c)(2)(i) Education, technical assistance, or training programs  
- 22 CFR 216 (c)(2)(iii) Analyses, studies, academic or research workshops and meetings |
| 2. All activities funded under the Core Component that may use pesticides, fertilizers and / or genetically engineered organisms (where Fund Donors may not allocate certain Core Component funds against specific programs or activities, and therefore do not have the ability to attribute particular outcomes or activities against their Core Funds contributions) | Negative Determination, subject to the following conditions  
- AVRDC funded activities under Core Component to follow the AVRDC 'best practices', applicable biosafety protocols, or environmental guidelines on pesticides, fertilizers, genetically engineered organisms use and application and other environmental considerations.  
- In the event that AVRDC is found noncompliant with the following procedures for pesticide use and handling, USAID will raise the issue to the Donors in its role as a member and pursue corrective actions in a multilateral context. Procedures for safe use and handling of pesticides include:  
  - Appropriate pesticide use protocols to safeguard the health of research personnel and to protect local ecosystems are developed and implemented, based on toxicological and environmental data for the proposed pesticides.  
  - Such safeguards will address selection of agrochemical products, pesticide storage, handling and application, including the use of Personal Protective Equipment (PPE), clean-up and disposal.  
  - Pesticides that may be required for research or limited field evaluations purposes by or under the supervision of project personnel is allowable provided the manufacturers' information on the toxicological and environmental data necessary is available to safeguard the health of research personnel and the quality of the local environment in which the pesticides will be used. |

9 Per 22 CFR 216.3(b)(2)(iii) (Exceptions to Pesticide Procedures)
<table>
<thead>
<tr>
<th></th>
<th>Pesticide-treated crops will not be used for human or animal consumption without proper evaluation and plan for safe use.</th>
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<tbody>
<tr>
<td>3. Activities funded under the Core component in particular where a USAID field Mission/for BFS or other Bureaus is providing funding and management oversight, and where the activity is not primarily research</td>
<td>May require a separate IEE amendment addressing the particular activities they are funding, to include the above considerations for genetically engineered organisms and use of insecticides or pesticides. BFS BEO or Mission EO is responsible for making the determination on whether a Mission funded activity requires an IEE amendment.</td>
</tr>
<tr>
<td>4. Identify and introduce new varieties for testing to improve postharvest quality: All activities that involve genetically engineered organisms (GEOs) are subject to USAID biosafety policies and procedures and may require a separate biosafety review prior to the activity</td>
<td>Negative Determination, subject to the following conditions</td>
</tr>
<tr>
<td></td>
<td>• For activities involving genetically engineered organisms taking place in physically contained and controlled facilities such as laboratories, greenhouses, or animal barns, grantees must follow the National Institutes of Health “Guidelines for Research Involving Recombinant DNA Molecules” (<a href="http://oba.od.nih.gov/rdna/nih_guidelines_oba.html">http://oba.od.nih.gov/rdna/nih_guidelines_oba.html</a>), as well as any applicable regulations in the host country.</td>
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<tr>
<td></td>
<td>• For activities involving confined field trials of genetically engineered organisms conducted on research sites owned or directly managed by AVRDC, researchers will operate according to the guidelines established in their biosafety procedures, subject to review by their institutional biosafety committee, as well as any applicable regulations in the country where the activity takes place.</td>
</tr>
<tr>
<td></td>
<td>• For activities that involve confined field trials (CFTs) of genetically engineered organisms on research sites managed by non-AVRDC partners and not directly controlled by AVRDC leading the activity, a biosafety review is required in accordance with USAID biosafety procedures, which requires submission of a supplemental CFT proposal to USAID for external review accompanied by evidence of host country biosafety approval for the specific activity. This biosafety review will be incorporated into a biosafety amendment to the Initial Environmental Evaluation with final concurrence required by the BFS Bureau Environmental Officer and the Agency Biosafety Officer. The information requirements for the full biosafety review can be found in the USAID Biosafety Proposal and Reporting Requirements (<a href="http://www.usaid.gov/our_work/environment/compliance/biosafety-proposal-reporting-requirements">http://www.usaid.gov/our_work/environment/compliance/biosafety-proposal-reporting-requirements</a>).</td>
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<tr>
<td></td>
<td>• For activities that involve the on farm field testing or deliberate open release of genetically engineered organisms into the environment, a biosafety review may be required, subject to the Agency Biosafety Officer’s discretion and in accordance with USAID biosafety procedures, which requires submission of a supplemental proposal to USAID for external review accompanied by evidence of host country biosafety approval for the specific activity. This biosafety review will be incorporated into a biosafety amendment to the Initial Environmental Evaluation with final concurrence required by the BFS Bureau Environmental Officer and the Agency Biosafety Officer. The information requirements for the full biosafety review can be found in the USAID Biosafety Proposal and Reporting Requirements (<a href="http://www.usaid.gov/our_work/environment/compliance/biosafety-proposal-reporting-requirements">http://www.usaid.gov/our_work/environment/compliance/biosafety-proposal-reporting-requirements</a>).</td>
</tr>
<tr>
<td>5. A. Identify and introduce new non-GEO varieties for testing to improve postharvest quality: All non-GEO activities that involve applied research trials not exceeding 4 ha in a single location and DO NOT involve support for procurement or use of pesticides.</td>
<td>Categorical Exclusion, per 22 CFR 216.2 (c)(2)(ii) Controlled experimentation exclusively for the purpose of research and field evaluation which are confined to small areas and carefully monitored.</td>
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<tr>
<td>B. Introduce better crop management practices to minimize food safety risks in vegetables from unsafe pesticide application and contamination by microorganisms that could affect the health of the consumers: All non-GEO activities that involve applied research trials not exceeding 4 ha in a single location and DO NOT involve support for procurement or use of pesticides.</td>
<td>Negative Determination, subject to the following conditions:</td>
</tr>
<tr>
<td></td>
<td>- Appropriate pesticide use protocols to safeguard the health of research personnel and to protect local ecosystems are developed and implemented, based on toxicological and environmental data for the proposed pesticides.¹</td>
</tr>
<tr>
<td></td>
<td>Such safeguards will address pesticide storage, handling and application, including the use of Personal Protective Equipment (PPE), clean-up and disposal.</td>
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<tr>
<td></td>
<td>- A PERSUAP must be developed and duly approved prior to use of project funds in support of pesticide procurement or use, including provision of technical advice regarding pesticide selection and use, and pesticide training that involves handling of pesticides (22CFR Regulation 216.3 (b)—USAID Pesticide Procedures).</td>
</tr>
<tr>
<td></td>
<td>Such safeguards will address pesticide storage, handling and application, including the use of Personal Protective Equipment (PPE), clean-up and disposal.</td>
</tr>
<tr>
<td></td>
<td>Pesticide-treated crops will not be used for human or animal consumption. (If crops are used for consumption, then suspend activity and consult with the REA or BEO [see Section 4 of this IEE]).²</td>
</tr>
</tbody>
</table>

¹ Per 22 CFR 216.3(b)(2)(iii) (Exceptions to Pesticide Procedures)
² See also restrictions on genetically engineered organisms, Section 4.
support for procurement or use of pesticides

<table>
<thead>
<tr>
<th>7. A. Identify and introduce new varieties for testing to improve postharvest quality: All non-GEO Activities under this award that do not involve applied research exceeding 4 ha in a single location.</th>
</tr>
</thead>
<tbody>
<tr>
<td>8. Introduce better crop management practices to minimize food safety risks in vegetables from unsafe pesticide application and contamination by microorganisms that could affect the health of the consumers: All non-GEO Activities under this award that do not involve applied research exceeding 4 ha in a single location.</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Negative Determination, subject to the following conditions:</th>
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<tbody>
<tr>
<td>Implementation of environmental best management practices (BMPs) for agriculture and irrigation. Such BMPs are available from USAID in the Sector Environmental Guidelines (available at <a href="http://www.usaidgems.org/sectorGuidelines.htm">http://www.usaidgems.org/sectorGuidelines.htm</a> and <a href="http://www.encapafrica.org/egssaa.htm">http://www.encapafrica.org/egssaa.htm</a>).</td>
</tr>
</tbody>
</table>

The procurement or use, promotion of, or training in use of pesticides, including herbicides and fungicides, is disallowed until such time that a Pesticide Evaluation Report and Safer Use Action Plan (PERSUAP) is completed pursuant to 22CFR Regulation 216.3 (b)—USAID Pesticide Procedures—and duly approved.³

8. Research activities funded under this award (USAID funds are directed toward the particular activity) where USAID/BFS is the source of funding and the activity does involve pesticides/insecticides may be subject to additional environmental compliance procedures.

<table>
<thead>
<tr>
<th>Negative Determination, subject to the following conditions:</th>
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<tbody>
<tr>
<td>Appropriate pesticide use protocols to safeguard the health of research personnel and to protect local ecosystems are developed and implemented, based on toxicological and environmental data for the proposed pesticides.⁴</td>
</tr>
</tbody>
</table>

Such safeguards will address pesticide storage, handling and application, including the use of Personal Protective Equipment (PPE), clean-up and disposal. Pesticide-treated crops will not be used for human or animal consumption. (If crops are used for consumption, then this activity may be subject to development of a PERSUAP [see Section 3 of this IEE: suspend activity and consult with the REA or BEO]).⁵

Activities on farms or field trials < 4 hectares are recommended for Negative Determination, subject to the following conditions:

| Appropriate pesticide use protocols to safeguard the health of research personnel and to protect local ecosystems are developed and implemented, based on toxicological and environmental data for the proposed pesticides.⁶ |

Such safeguards will address pesticide storage, handling and application, including the use of Personal Protective Equipment (PPE), clean-up and disposal. Pesticide-treated crops will not be used for human or animal consumption. (If crops are used for consumption, then this activity may be subject to development of a PERSUAP [see Section 3 of this IEE: suspend activity and consult with the REA or BEO]).⁷

³ See also restrictions on genetically engineered organisms, Section 4
⁴ Per 22 CFR 216.3(b)(2)(iii) (Exceptions to Pesticide Procedures)
⁵ See also restrictions on genetically engineered organisms,
⁶ Per 22 CFR 216.3(b)(2)(iii) (Exceptions to Pesticide Procedures)
⁷ See also restrictions on genetically engineered organisms,
Activities conducted on areas > 4 hectares are recommended for a Negative Determination, subject to the following conditions:

Preparation of PERSUAP consistent with guidance established in 22 CFR 216.3 “Pesticide Procedures” prior to procurement, distribution, use, handling, transport, or disposal of any pesticides.

9. Small-scale irrigation methods that could reduce contamination of the edible part of the crop with grey water contaminants that could lead to postharvest quality issues

**Negative Determination Subjected to the following conditions:**

- All activities should take into accounts the environmental impacts of irrigation method selected, including soil organic matter and macronutrient availability, soil erosion and sedimentation, soil nutrient losses, stream flows, aquifer recharge, lake and reservoir levels, and hydrology (surface and groundwater resources, soil type and topography). AVRDC should refer to USAID Sector Environmental Guidelines: Agriculture (http://www.usaidgems.org/Documents/SectorGuidelines/SectorEnvironmentalGuidelines_Agriculture_2014.pdf). Field work and technical recommendations should incorporate the “Checklist for Planning Environmentally Sound Small-Scale Irrigation” on pp. 57-63 of that document.
- For pesticide use and GEO refer to the conditions above of this IEE.

10. Use of Low cost technologies that were previously developed and easily transferable to reduce postharvest losses.

A. Use of solar dryers that can include a heating chamber (using charcoal or firewood) for use in the absence of sunlight
B. Use of simple evaporative coolers to create cool and humid conditions to slow quality deterioration of fresh vegetables caused mainly by moisture loss
C. Use of low-cost hydro-coolers that consists of a frame with a bamboo slat lining and plastic sheeting; and use ice to cool the water

**Categorical Exclusion, per 22 CFR 216.2 (c)(1)(iii) Research activities which may have an affect on the physical and natural environment but will not have a significant effect as a result of limited scope, carefully controlled nature and effective monitoring.**

11. Activities funded under the Postharvest component in particular where a USAID field Mission/or BFS or other Bureaus is providing funding and management oversight, and where the activity is not primarily research

May require a separate IEE amendment addressing the particular activities they are funding, to include the above considerations for genetically engineered organisms and use of insecticides or pesticides. BFS BEO or Mission EO is responsible for making the determination on whether a Mission funded activity requires an IEE amendment.
IV. Recommended Threshold Decisions and Mitigation Actions

a. Recommended Threshold Decisions and Conditions

A Negative Determination with Conditions is recommended. Many activities under the AVRDC award qualify to one or more categorical exclusions as listed above. Some activities, however, have the potential for environmental impact. Therefore the following conditions are recommended:

For all activities conducted funded under this award the following conditions apply:

- For activities involving genetically engineered organisms taking place in physically contained and controlled facilities such as laboratories, greenhouses, or animal barns, grantees must follow the National Institutes of Health “Guidelines for Research Involving Recombinant DNA Molecules”. These guidelines can be found at: http://oba.od.nih.gov/rdna/nih_guidelines_oba.html as well as any applicable regulations in the country where the activity takes place.

- For activities involving confined field trials of genetically engineered organisms conducted on research sites owned or directly managed by AVRDC where AVRDC leading the activity, AVRDC will operate according to the guidelines established in their biosafety procedures, subject to review by their institutional biosafety committee, as well as any applicable regulations in the country where the activity takes place.

- For activities that involve confined field trials (CFTs) of genetically engineered organisms on research sites managed by non-AVRDC partners and not directly controlled by the AVRDC, a biosafety review is required in accordance with USAID biosafety procedures, which requires submission of a supplemental CFT proposal to USAID for external review accompanied by evidence of host country biosafety approval for the specific activity. This biosafety review will be incorporated into a biosafety amendment to the Initial Environmental Evaluation with final concurrence required by the BFS Bureau Environmental Officer and the Agency Biosafety Officer.

- For activities that involve the on farm field testing or deliberate open release of genetically engineered organisms into the environment, a biosafety review is required in accordance with USAID biosafety procedures, which requires submission of a supplemental proposal to USAID for external review accompanied by evidence of

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1 Information on biosafety application can be found at http://rpmportal.net/library/content/tools/environmental-regulations-compliance-tools
Other regulatory information related to USAID biosafety could be found at:
http://www.usaidgems.org/Documents/complianceTopics/Biosafety_6Feb2010.pdf,
host country biosafety approval for the specific activity. This biosafety review will be incorporated into a biosafety amendment to the Initial Environmental Evaluation with final concurrence required by the BFS Bureau Environmental Officer and the Agency Biosafety Officer.

- All activities involving pesticides (insecticides, fungicides, herbicides, etc.) in controlled experimentation exclusively for the purpose of research and field evaluation which are confined to small areas (< 4 ha) and carefully monitored are authorized hereunder, provided that: (1) the manufacturers of the pesticides must provide toxicological and environmental data necessary to safeguard the health of research personnel and the quality of the local environment in which the pesticides will be used; and (2) treated crops will not be used for human or animal consumption. All activities that fall outside of the category of controlled experimentation exclusively for the purpose of research and field evaluation and entail the procurement or use, or both, of pesticides shall be analyzed in accordance with USAID Pesticide Procedures in 22 CFR 216.3(b), and no funds may be expended by the Recipient (or any collaborating partners) for the procurement, use, transport, storage, or disposal of pesticides unless they are specifically approved by USAID. In accordance with 22 CFR 216.3(b), such approval will require an amendment to the existing USAID Initial Environmental Examination (IEE) applicable to this Agreement.

- All activities funded from a Mission and managed by the Mission (including the use of genetically engineered organisms or the use of pesticides or both) may require a separate IEE amendment addressing the particular activities they are funding. BFS EO or Mission EO is responsible for making the determination on whether an activity needs an amendment or not.

**Monitoring:** As required by ADS 204.3.4, USAID/BFS/ARP will actively monitor and evaluate whether there are new or unforeseen consequences arising during implementation that were not identified and reviewed in accordance with 22 CFR 216. USAID/BFS shall also monitor the need for additional review. If additional activities not described in this document are added to this program, an amended environmental examination must be prepared and approved.

**Compliance with Host Country Requirements:** Nothing in this IEE substitutes for or supersedes IP, sub-grantee and subcontractor responsibility for compliance with all

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applicable host country laws and regulations for all host countries in which activities will be conducted under this PIO grant to AVRDC.

AVRDC and any sub-grantees and/or subcontractors must comply with each host country’s environmental regulations unless otherwise directed in writing by USAID. However, in case of conflict between host country and USAID regulations, the latter shall govern.