TITLE II ENVIRONMENTAL COMPLIANCE FACESHEET

Title of MYAP: Batha-Ouaddai Food Security Initiative (BOFSI)

FFP Grant Number: FFP-A-00-08-00070

Country/Region: Chad/West Africa

Implementing Partner: Africare

Funding Begin: 08/01/08 **Funding End:** 07/31/12 **LOA Amount:** $25,578,900

Resource Levels: **Commodity:** 22,520 MT
Monetization Request: $ 9,796,157 **202(e):** $1,430,920 **ITSH:** $ 2,607,751

IEE Prepared by: Al-Hassana I. Outman, Country. Rep. **Date:** June 24, 2008

IEE Amendment (Y/N): N

ENVIRONMENTAL ACTION RECOMMENDED:

☒ **Request for Categorical Exclusion(s):** activities have no adverse effect (i.e., training, technical assistance; not to include any infrastructure rehabilitation.)

☒ **Negative Determination:** no significant adverse effects expected for activities which are well defined over life of the award.

☒ **without conditions** (no special mitigation measures needed)

☒ **with conditions** (mitigation measures specified)

☐ **Positive Determination:** potential for significant adverse effect of one or more activities. Appropriate environmental review needed/conducted.

☐ **Deferral:** elements not well defined; activities will not be implemented until amended IEE is approved.

Environmental Media and/or Human Health Potentially Impacted
Air ☐; *Water* ☒; *Land* ☒; *Biodiversity* ☐; *Human Health* ☒; *Social* ☒; *None* ☐

SUMMARY OF FINDINGS:

This IEE accompanies the Africare-ADRA/Chad MYAP for FY 2008-2012. It presents a first review of the foreseeable impacts on the environment of the activities to be implemented under the proposed program.

Recommended IEE Determinations

Out of all activities of proposed Africare-ADRA MYAP, **41** activities qualify for categorical exclusion; **9** activities are recommended for Negative Determination without Conditions and **5** recommended for Negative Determination with Conditions.

A Categorical Exclusion per 22 CFR 216.2(c)(1)(i) is recommended for the monetization and distribution of agricultural commodities since this activity will have no negative effect on the environment.

A Categorical Exclusion is recommended for the following activities pursuant 22 CFR 216.2 (c) (2) (i), (ii), (iii), (v), (viii), (xi). These activities include development of training programs and technical assistance for capacity building when no physical effect on the environment is expected, improved practices for better maternal health and nutritional status of children under five, village management committees, reinforce capacity of local public health personnel and traditional birth attendants.

A Negative Determination without Conditions, pursuant 22 CFR216.3 (a) (2),(viii), is recommended for the following activities such as: Activity 2.1.2: Construct/rehabilitate wells, Activity 2.2.11: Create and/or rehabilitate at least one community based health and nutrition training center in each major program area, Activity 3.1.3: Identify appropriate sustainable technologies, Activity 3.1.4: Facilitate access to critical farm inputs and technology, Activity 3.2.1: Develop and rehabilitate pastoral water points , Activity 3.2.4: Promote improved fodder harvesting and natural fodder conservation, Activity 3.3.1: Encourage the development of community cereal banks, Activity 3.3.5: Strengthen access of groups to appropriate transportation, Activity 3.4.4: Create water harvesting soil conservation technologies.

The negative determination for *health* is conditioned as follows:

Following the USAID Bureau for Africa's Environmental Guidelines for Small Scale Activities in Africa (EGSSAA) Chapter 8, "Healthcare Waste: Generation, Handling, Treatment and Disposal" (found at this URL: http://encapafrica.org/SmallScaleGuidelines.htm) .

The negative determination for *water systems* is conditioned as follows:

Well sites will be carefully selected with the participation of communities to identify all possible impacts, including soil tenure issues, nature of soils, vegetation and livestock. Well development will include the construction of an open basin to collect waste water for livestock watering. A protection wall or fence will be constructed around each well to avoid direct access to the well by animals. Chemical and bacteriological tests of water for *E. coli* and fecal coliforms as well as

for the presence of arsenic will be required prior to water consumption. Wise management of water resources will be required if scarce.

The negative determination for *appropriate sustainable technologies* is conditioned as follows:

BOFSI acknowledges that promotion of efficient fuel use (i.e., chopping wood, using lids, etc) and/or fuel-efficient stoves is a labor-intensive process that requires IEC campaigns and will refer to the USAID report: *Fuel Efficient Stove Programs in IDP Setting- Summary Evaluation Report, Uganda* for program design and monitoring and evaluation considerations.

A Negative Determination with Conditions is recommended for dams and ponds improvement as per 216.3 (a)(2)(iii). This negative determination is conditioned as follows:

Mitigating activities, such as tree plantation, stream bank stabilization, and training in as well monitoring systems to measure pond sedimentation and water quality.

A Negative Determination with Conditions is recommended for all *tree planting* activities under the various infrastructure activities (water pts, roads, dams, health clinic) as per 216.3 (a)(2)(iii). This negative determination is conditioned as follows,

All tree planting activities should have the goal of replacing the ecological services and habitat disrupted by infrastructure activities and should include these critical elements in tree planting: (1) site/species match; (2) genetic selection of seed source; (3) site preparation; (4) timely planting; (5) weeding; and (6) protection from fire and grazing animals.

A Negative Determination with Conditions is recommended for the construction of rural roads per 22 CFR 216.3(a)(2)(iii). This negative determination is conditioned as follows:

- The project shall make use of locally available road building materials;
- The road shall seek to follow existing paths; not affect prime farmland, nor engender loss to individual farmers; follow the surface gradient to avoid gullies or areas requiring costly structures, such as bridges;
- The road planning shall identify areas and implement measures to avoid channeling of water or the creation of gullies,
- Road construction will be supervised by local semi-skilled technicians, using simple, locally available tools, Road construction crews shall be composed of residents of the villages within a 5 km radius to ensure that participants can return home at night, thus reducing the need for (and impact from) temporary camps.

Monitoring and Evaluation

During the five-year MYAP implementation period, Africare-ADRA/Chad are required to monitor and evaluate the project's success through pre-determined indicators for the monitoring of environmental indicators.

The Environmental Guidelines for small-scale activities in Africa will be used to assist Africare-ADRA/Chad and their local partners to incorporate into their activities appropriate mitigation and monitoring for a sound environment.

USAID APPROVAL OF ENVIRONMENTAL ACTION(S) RECOMMENDED:

Clearance:

Mission Director: _____ Date: _____

Food for Peace Director: _____ Date: 8-15-08

Concurrence:

DCHA Bureau Environmental Officer: _____ Date: 8/25/08
Erika Clesceri

Approved: ☑ Disapproved: ☐

Optional Clearances:

Regional FFP Officer: _____ Date: 7/18/2008
Zema Semunegus

Regional Environmental Officer: _____/S/_____ Date: 7/17/2008
Tim Resch, Acting

Africa Bureau Environmental Officer: _____ Date: _____
Brian Hirsch

INITIAL ENVIRONMENTAL EXAMINATION

Program/Project Data:

MYAP Program Activity: **Batha-Ouaddai Food Security Initiative**
CS Name, Country/Region: **Africare-ADRA Chad/ Central Africa**

1. BACKGROUND AND ACTIVITY DESCRIPTION

1.1. Background

Chad is widely considered to have the greatest economic potential of all the Sahelian countries. In spite of the fact that Chad became an oil exporting country since 2003, 64% of its population lives in extreme poverty. 74.5% of the population aged more than 15 is illiterate, including 87.5% of women. To date, however, the country remains highly food insecure and vulnerable to a wide variety of climatic and internal political shocks. Chad's malnutrition rates are some of the highest in Africa and in the world and have shown little progress in the last decade.

Batha and Ouaddai regions are among the most vulnerable and food insecure administrative regions in the country (48.7% of households in Batha and 61.1% of households in Ouaddai suffer from moderate to severe food insecure). Even in years with acceptable rainfall, household food production provides only a fraction of food needs because of low yield production systems, limited development of irrigated agriculture, and intensive market-oriented livestock production systems that draw attention away from agriculture. Households have traditionally coped with food shortages by relying on cash earned from the sale of livestock and livestock products and remittances from family members living abroad. A series of historic shocks, combined with the progressive sedentarization of many nomadic groups, have skewed livestock ownership to the point that over 60 percent of Batha households have almost no large livestock holding at all.

The Batha-Ouaddai Food Security Initiative (BOFSI) is a follow-up phase of the Ouaddai Food Security Initiative II (OFSI II) implemented from October 2003 through September 2007 and received an eight month-no cost extension October 1, 2007 – May 31, 2008. BOFSI is designed to assist the government of Chad and the local communities of Ouaddai and Batha in their daily and common efforts to combat poverty by implementing lasting development programs in the regions of Batha and Ouaddai. The total number of villages to be covered by the project is 114 with an estimated population of 98,610 persons (63,870 people in Ouaddai and 34,740 in Batha).

The goal of the Batha-Ouaddai Food Security Initiative (BOFSI) is to reduce food insecurity and vulnerability to risk for households in the Ouaddai and Batha regions. The project builds on Africare's highly successful OFSI II project that is currently active in 63 villages of Ouaddai since FY03. Specifically, BOFSI will support:

- A "transition" package that will prepare **39** of the more successful OFSI II villages in developing the organizational structures that they need to sustain project achievements over time and

- A more intensive "core package" of innovations in **30** Ouaddai villages and **45** new villages in the Batha region that are still highly vulnerable in terms of basic food insecurity and organizational capacity to manage routine risk and shocks.

1.2. Description of Activities

Under the proposed MYAP, Africare and ADRA intend to carry out interventions in 114 villages as specified above. These interventions will fall under three strategic objectives (SO). Proposed activities and intermediate results (IRs) to be undertaken under each SO with, are presented below:

1.2.1. Strategic Objective 1 (SO1): Community capacity and early warning systems strengthened to reduce risk and vulnerability.

IR1.1: Community capacity to design, implement and monitor activities that reduce exposure to risk and decrease vulnerability enhanced

1.1.1. Create food security committees (FSC) in all intervention villages
1.1.2. Create special interest in economic groups
1.1.3. Support the transformation of local groups into cooperatives and networks
1.1.4. Support existing regional training systems for functional literacy
1.1.5. Review training modules for extension agents and technical partners
1.1.6. Develop synthesis versions of all training modules and translate them

IR1.2: Local capacity for detecting, monitoring and responding to risks and shocks that threaten livelihoods systems enhanced

1.2.1. Train trainers in SCAP/RU and organize bi-annual reviews of the BOFSI methodology and program
1.2.2. Identify and monitor early warning indicators through annual PRAs
1.2.3. Create pilot SCAP/RU program in the Ouaddai
1.2.4. Organize exchange visits to observe SCAP/RU systems
1.2.5: Scale-up pilot project to the entire project area

1.2.2: SO2: Human health related to nutrition, potable water and health education, improved

IR2.1: Increase access to potable water

2.1.1. Organize hydrologic surveys of proposed intervention areas
2.1.2. Construct/rehabilitate wells
2.1.3. Construct/rehabilitate ponds/cisterns to collect surface water in villages/neighborhoods without easy access to wells
2.1.4. Introduce innovative and appropriate technologies for collection and management of water in villages without easy access wells
2.1.5. Facilitate access to traditional and modern systems of purifying drinking water

2.1.6. Organize exchange visits to Niger and Burkina Faso for to study innovative technologies for drinking water in arid zones
2.1.7. Train and retrain water point management committee sessions

IR2.2: Backstopping and networking between government health structures and community based health and nutrition initiatives

2.2.1. Monitor the quality of health and nutrition services in the health centers and community in which the project intervenes
2.2.2. Train a pool of qualified government trainers in each health district to conduct training activities (# of health districts in which personnel identified and strengthened)
2.2.3. Train and retrain health workers on the design, execution and monitoring of community based health and nutrition programs
2.2.4. Train and retrain the BOFSI male and female extension agents on the design, execution and monitoring of community based health and nutrition
2.2.5. Develop review and revise training modules on priority themes (based on existing health modules, nutrition, sanitation and potable water
2.2.6. Train and retrain village nutrition and education volunteers
2.2.7. Train and retrain traditional birth attendants (2 per village)
2.2.8. Train and retrain health committees (COSAN), health management committees (COGES) and food security committees (FSC)
2.2.9. Train and retrain peer counselors for HIV/AIDS in collaboration with FOSAP
2.2.10. Strengthen the consideration of sanitation in all training modules and programs and promote public awareness of sanitation issues (with special focus on latrines)
2.2.11. Create and/or rehabilitate at least one community based health and nutrition training center in each major program area
2.2.12. Build BOFSI technical specialist's capacity to design and execute innovative community based programs
2.2.13. Pilot test foraine model of health center community outreach (n=cs and villages)

IR2.3: Health and nutrition status of children less than 5 years of age and women of reproductive age improved

2.3.1. Promote community based growth monitoring of children 0-24 months of age
2.3.2. Execute hearth programs (FARN) for moderately malnourished children in communities where a high percentage of malnourished children are identified by growth monitoring

1.2.3: SO3: Livelihood systems strengthened and made more resilient

IR3.1: Community capacity for sustainable increases in crop production enhanced

3.1.1.Conduct baseline land use surveys in collaboration with the hydrological surveys
3.1.2. Develop land for irrigated agriculture
3.1.3. Identify appropriate sustainable technologies
3.1.4. Facilitate access to critical farm inputs and technology

IR3.2: Community capacity for sustainable increases in livestock productivity enhanced

3.2.1 Develop and rehabilitate pastoral water points
3.2.2. Promote good management of pastoral water points built/rehabilitated
3.2.3.Train and retrain livestock auxiliaries and provide them with access to veterinarian products (n= persons trained)
3.2.4. Promote improved fodder harvesting and natural fodder conservation (n= village)
3.2.5. Promote cultivated pasture crops (n= village)
3.2.6. Develop special programs to help vulnerable female-headed households reconstitute their herds

IR3.3: Household capacity to minimize post harvest losses and diversify income-earning opportunities increased

3.3.1. Encourage the development of community cereal banks
3.3.2. Promote the development of community based commercial information system
3.3.3. Train producers in the transformation, conservation and marketing of agro-pastoral products
3.3.4. Support the development of market networks that are oriented to female producers
3.3.5. Strengthen access of groups to appropriate transportation
3.3.6. Encourage the development of traditional credit systems (tontine)
3.3.7. Create/maintain/strengthen village savings and loan institutions (caisses)

IR3.4: Safety net and emergency programs that vulnerable households need to build assets and avoid asset erosion strengthened

3.4.1. Build community capacity to design and execute FFW
3.4.2. Construct communal latrines
3.4.3. Create/rehabilitate ponds
3.4.4. Create water harvesting soil conservation technologies
3.4.5. Construct and maintain rural access roads
3.4.6. Construct and rehabilitate dams

1.3. Purpose and Scope of IEE

This IEE accompanies the Africare-ADRA/Chad MYAP for FY 2008-2012. It presents a first review of the foreseeable impacts on the environment of the activities to be implemented under the proposed program.

2. COUNTRY AND ENVIRONMENTAL INFORMATION

2.1. Locations affected

Chad is a land-lock francophone country occupying 1,284,000 square kilometers of which 1,269,200 square kilometers is land and 24,800 square kilometers of water. It is one of the

poorest country in the world, classified by CILSS as a least developed and low-income food deficit country despite the exploitation of oil since 2003.

According to the World Bank, Chad's economic performance falls among the fifth range of the poorest nations in the world. Moreover, Chad has suffered from a particularly troubled history of internal strife and external military aggression that has continued from soon after independence in 1960 until the present day.

The Batha and Ouaddai are adjacent regions located in the northern-east part of Chad, sharing similar climatic characteristics. The two regions are subject to unpredictable rainfall patterns, which is a fundamentally cause of food insecurity. Poor rainfall patterns, added to poor technological practices of populations, result in low agricultural production (availability) that is never enough to satisfy the consumption needs of the populations.

Even if laws defining general principles of the protection of natural resources in Chad have existed since 1998, no operational texts are available yet. A national plan (Plan d'Action National de lutte contre la désertification (PAN)) was designed in 2000, but lacked regional or local plans. A national action plan (Plan National d'Action pour l'Environnement) was finalized in 2004, but resources were not mobilized for its implementation. Consolidated efforts with partners such as the World Bank are expected.

Environment degradation has been observed since the 1970s. Environment security is threaten by biomass deterioration due to extensive agriculture and livestock husbandry, recurrent rain deficit, increasing use of biomass for household energy requirement, and low regulation of natural resources due to warfare context.

However, the different documents from the Ministry of Environment and Forestry (i.e., Shémas Directeur de Lutte Contre la Desertification) state that degradation and desertification--which pose the biggest threat to the environment--are the result of drought, human population increase and poor farming techniques in rural areas. The Sahara desert is reportedly advancing from north to south at a rate of 4 km per year. One of the results of this advance of the desert is that the region of Kanem is being covered in sand. Some villages in this region are engulfed in sand due to this north-south movement of the desert.

Chad's poor agricultural performance can be explained, mainly, by the fact that the country belongs to a geographical area where the natural resources have undergone continuous deterioration over the last three decades. This environmental degradation causes Chad to face several challenges, of which, the more threatening are the natural disasters resulting from droughts or floods. The Sahelian Zone continues to remain vulnerable to risks such as water deficits, while the Sudanese Zone continues to face documented rainwater deficits for the fifth year in a row. In general, the change in climate reveals a decrease in rainfall in the Sahara, Sahelian and Sudanese Zones where droughts have become more likely to occur at least once per decade. For droughts measured in areas within these zones, this translates to one out of every three years.

Insufficient precipitation in the year 2007 had consequences on the hydrous mode. With insufficient rains, the Lake Fitri in the Batha region and most rivers across the country did not

overflow. The cultivated rice area depends on this overflow for their water needs. Due to the lack of rain, rice production along the Pende River and the Nya River in the area of Doba, was classified as bad to non-existent. The Sudanese Zone, however, holds concealed water sources that merits particular attention since there are many perennial rivers and water is abundant in some places. By controlling these waters, agriculture and husbandry can become more secure.

2.2. National Environmental Policies and Procedures (of host country both of environmental assessment and pertaining to the sector)

Over population, drought and nature all contribute to Chad's ongoing environmental degradation. With an increased population and poor agricultural practices in the rural areas, the resulting desertification poses the greatest threat to the natural environment. Chad does not yet have a specific national environmental plan on sustainable development. However, the Government of Chad's concern for environmental impact of development is reflected in its adoption of several plans and international agreements (see "Rapport national sur le Développement Humain au Tchad", 1997, p. 27). It calls for the protection of the environment; the improvement of production systems; and the inclusion of an environment component in every development project. In addition, the goal is promoting research and education in order to transfer the management of natural resources to the grassroots populations.

To combat environmental damage, the Government of Chad with the assistance of PVOs and NGOs, have set forth strategies for capturing rainwater, slowing water runoff and reforestation. Sensitization campaigns as such to raise the awareness of rural farmers through the introduction of proper farming methods and practices will contribute to this goal of development with environmental protection and prevention of environmental degradation.[1]

Africare will continue to collaborate with the departmental technical services in charge of agriculture, livestock and environment in the implementation of the proposed activities. Careful attention will be paid to ensure that activities comply with the process and procedures set out in the USAID Bureau for Africa Environmental Guidelines for Small Scale Activities in Africa, as well as the guideline set forth by the government of Chad.

3. EVALUATION OF ACTIVITY/PROGRAM ISSUES WITH RESPECT TO ENVIRONMENTAL IMPACT POTENTIAL

Many of the proposed BOFSI activities are either training oriented or very small-scale, and as such will have little or no adverse biophysical effect on the environment. However, as recognized below, some aspects of the proposed interventions, if not carefully implemented and monitored, could hold limited potential for adversely affecting the environment. In this section, the specific interventions will be described as well as the analysis of the potential environmental impact. The accompanying table summarizes the recommended threshold decisions for each intervention.

3.1.Monetization and Food Distribution

[1] *République du Tchad, Loi No 014/PR/98. Définissent les Principes Généraux de la Protection de l'Environnement. Juillet 1998.*

This activity is the primary funding mechanism for BOFSI. The process involves: 1) the importation of US agricultural products by ocean and land transportation; and, 2 the distribution of food through food for work, food for training and targeted distribution programs. *There is no anticipated environmental impact associated with these activities. Therefore, a Categorical Exclusion is recommended for monetization and distribution of commodities pursuant to 22 CFR 216.2 (c) (1) (i) as these activities will no have an effect on the natural of physical environment.*

3.2. Community capacity and early warning systems (S01)

Community organization capacity: This component will contribute to the enhancement of the organizational and management capacities of local communities to analyze their food insecurity and nutrition problems and develop strategies to address them. This will be achieved through technical training, exchange visits and hands-on demonstration micro-projects. Skill development will focus on organization and management, monitoring and evaluation.

SCAP/RU: The project will develop community based management system of risk and emergency programs including an early warning system known as "*Système Communautaire d'Alerte Precoce et de Reponse aux Urgences* (SCAP/RU). This system involves the identification and monitoring of trigger indicators that could be indicative of rapidly deteriorating food security conditions, necessitating a modification in the type of support this program can provide (e.g. increasing the amount of direct distribution vs. farmers training during a period of no rainfall).

Both activities under this objective qualify for a Categorical Exclusion under 22 CFR 216.2 (c)(2)(i), (ii), (iii), (v), (viii), (x) and (xi) as the actions supported under this part will have no effect on the environment as "education, technical assistance, or training programs except to the extent such programs include activities directly affecting the environment." Hence, no further mitigation is required.

3.3. Human Health related to nutrition, potable water and health Education (S02)

a) Increase access to potable water: This activity will include both the construction and rehabilitation of water facilities (boreholes, wells) and facilitation of access to traditional and modern systems for purifying drinking water. The development of water source sites poses no special threat to the environment because it will not involve displacement of communities, excess soil erosion, endangered animal habitats, nor any damaging situations during the rainy season. The potential negative effects associated with these actions may include: (1) the depletion of the water table; (2) creation of stagnant water, which invites disease-carrying insects; (3) soil erosion from collection of construction materials and/or digging; (4) destruction of vegetation; (5) loss of agricultural labor; (6) possibility of unsanitary conditions, which may pose health problem; and, (7) water use conflict.

These threats will be minimized as construction of these facilities (on small scale) will be done using best practices by local artisans trained by GTZ; skilled labor will be used for construction of water catchments and pond development. The water hygiene activity will be a mitigation action and Africare-ADRA will adhere closely to the implementation Guidelines for water

supply and sanitation set forth in USAID Bureau for Africa Technical paper #18, Environmental Guidelines for small-scale activities in Africa" will be followed and implemented by Africare-ADRA/Chad throughout the life of the project. More specifically, the excavation of new boreholes or open wells will be decided after a survey of existing water points was done and resource availability checked with requirements. Sites will be determined in minimizing failure rate by avoiding rocky soils, and prioritizing low lands were the water table is high.

Excavated soils will be disposed to prevent further erosion of soils and damage of arable soils around the infrastructure. Communities will be encouraged to use the excavated soils for housing construction and improvement of household living area. In case no-water wells are found they will buried using excavation materials. No new construction of water well will be undertaken before a survey of existing infrastructure is done. Rehabilitation of existing structures will be a priority, before new constructions are launched. Constructions sites will be carefully selected with the participation of communities after specific participatory rural appraisals, to identify all possible impacts of the new infrastructure, including soil tenure issues, nature of soils, vegetation and livestock.

Well development will include the construction of an open basin to collect waste water for livestock watering. This will contribute to the cleanness of well surface. A protection wall or fence will be constructed around each well to avoid direct access to the well by animals. Chemical and bacteriological tests of water will be required prior to water consumption. Wise management of water resources will be required if scarce, and it is expected that well designed water catchments ponds/cisterns will reduce the surface water flow immediately after rainfall through water catchments and will increase the groundwater aquifer through permanent ponds.

Negative Determination without Conditions per 22 CFR 216.3 (a)(2)(iii) is the recommended threshold decision.

b) Creation of committees for water management and sanitation;

c) Government health structures to support community-based health and nutrition programs and Local community;

d) Support community based health nutrition activities;

e) Creation of sustainable systems for community-based rehabilitation of moderately malnourished children

Africare's approach with regard to all its health and nutrition (H&N), maternal and child health (MCH) will seek to empower government health structures, households, communities and local structures to undertake actions to improve the low nutrition status of the population and to effectively increasing demand for and the provision of quality primary health care and nutrition services. In support to this, efforts will focus on promoting health behaviors among individual and small group of women and strengthen the ability of community groups to lobby for and facilitate the provision of quality health services.

All the above b, c, d, and e activities (with the exception of health centers creation/rehabilitation, construction/rehabilitate of wells, creation/ rehabilitation of health and nutrition centers, and construction/rehabilitate ponds/cisterns below in f, g, h) qualify for a Categorical Exclusion under 22 CFR 216.2 (c)(2)(viii), which states "programs involving nutrition, health care, except to the extent designated to include activities directly affecting the environment (such as construction of facilities, water supply systems, waste water treatment etc.) "

f) Create/rehabilitate health centers for Foraine: Construction or rehabilitation activities could have adverse effect on the environment listed in Chapter 9 of the Environmental Guidelines Page 12 to 14 may apply, including the destruction of historical sites, destruction of trees or vegetation by direct construction or increased human frequentation, contamination of soil or water in case latrines are constructed, nuisance from airborne dust or extract noise from constructions works, or quarries.

Construction of the village community health center will occur within village limits, usually on an unoccupied parcel contributed by the village authorities. Precautions will be taken for participative site selection to avoid destruction of historical areas, effect on lowlands, and steep slopes. The use of local material such as mud bricks, or rocks will be encouraged. Sound construction techniques will be used to avoid accidents. Construction works will be implemented on non workdays to limit impact of factors such as dust, noise, trenches on the health center users. Construction design will use the domed-roof wood-free architecture. The operation generates very little waste, as it will generally only provide immediate care for emergencies and acute illness such as malaria. Such waste as may occur (e.g., needles), will be disposed of by burning and burial. This activity will not have a significant negative impact on the environment, and therefore is found to have a *Negative Determination without condition as regards environmental impact as per 22 CFR 216.3(a)(2)(iii).*

g) Creation of sustainable systems for community based growth monitoring;

For point g) monthly weighing of children under five will be performed by VNEs and BOFSI staff. The goal is to demonstrate to mothers the effect of improved diet and feeding techniques on their children's growth, as for point h, mothers who have healthy nourished children will serve as model mothers for the other women. Short-term feeding programs will be established in their homes, and lessons will be conducted with the assistance of the VNE, VSE and health extension agents. G and h are trainings and technical assistance interventions which are not expected to have adverse impacts on the environment. They are recommended for Categorical Exclusion based on 22 CFR 216.2(c)(2)(i).

3.4. Livelihood Systems Strengthened and made more resilient (S03)

a) Increase access to water for production activities: The project intend to conduct surveys for the rehabilitation and construction of water for small-scale agricultural production. A system of water harvesting will be developed in collaboration with the community and local authorities. Small-scale water diversion structures will be initiated to use the overflow of temporary river Batha to promote sustainable safe farming, avoiding the negative impact of drought on crops. On the plains of the Batha region, the construction of small-scale mud dikes will help to better

manage water for recessional farming, and limit erosion. These small-scale structures will be designed following participatory appraisals on specific sites and discussions with communities, stakeholders to minimize adverse impacts and maximize positive impacts. Mitigation actions include participatory site selection to avoid sensible habitats, or historical sites, use of good irrigation management since most dams will be infiltration dams. In case of tree cutting during construction, natural trees will be replanted. The project will motivate communities to use mosquito nets to avoid malaria, and the use of traditional and simple systems of purifying water before use. The project will use participatory methods in selecting appropriate sites to avoid conflicts. The recommended finding for the dam construction/rehabilitation activity is therefore *Negative Determination with conditions, as per 22 CFR 216.3(a)(2)(iii).*

b) Improve access to higher yielding crop inputs and technologies: This activity include the provision of improved hand tools, improved grain and vegetable seeds, promotion of animal manure as fertilizer, and training on integrated pest management. These selected technologies based on research done by International Institutes will be pilot tested in small-scale demonstrations plots in comparison with native technologies. The demonstration plots will be a training and visit sites for all producers to better access the performance of the technology before adoption. Selection will be done in collaboration with the National Research Institutes, and Development partners. Only organic fertilizers will be promoted. Contour farming along with water harvesting techniques will be promoted. The project will not fund nor encourage the use of pesticides to manage insects since these technologies could be dangerous for the environment. In the project intervention area such activity of pest management is implemented by the governmental specialized services and funded by FAO. These activities present very little negative impact to the environment, and therefore qualify for a *Negative Determination without Conditions* under 22 CFR 216.3(c)(a)(2)(iii)

c) Increase access to pastoral water points: This activity will involve digging small wells, or rehabilitation of natural ponds in target villages to serve as drinking points for animals; training households on strip harvesting, and storing of natural fodder, and fattening animals. Pond rehabilitation involve a better control of livestock direct access to water points, therefore reducing erosion, and direct pollution of surface water by livestock feces. These activities are environmentally friendly because the water points avoid animals straying around in search of food and in the process increasing the vulnerability of soils to erosion and grass to destruction. The recommended finding is Negative determination with condition, as per 22 CFR 216.3(a)(2)(iii).

d) Increase livestock of female-headed households

e) Increase value added product transformation

f) Improve access and ability to manage credit

For activities d, e, f, seed money will be used as a safety-net to fight poverty among vulnerable households by rebuilding livelihoods, and developing value added activities using local products. The management of revolving funds and value added processing require that participating beneficiaries be trained to improve their conservation techniques. They will also be trained in

improved harvest, transformation and handling technologies of local produced agricultural products and for animal by-products such as milk skin and hides. These are trainings and technical assistance, which, are not expected to have significant impacts on the environment since they do not involve the use of pesticides, nor chemical fertilizers. Improved grain storage involves the use of natural products such as ashes, sand, solar heat. Products extracted from plants are used for the processing of hides. A Categorical Exclusion based on 22 CFR 216.3(a)(2)(iii) is recommended for these activities.

g) Construction of rural roads: Feeder roads will be rehabilitated/opened by communities using hand tools, and Food for Work. Construction will include filling erosion holes and moving rocks and bushes from the road. No construction involving heavy equipment will be required. The rural road will generally follow existing paths, but will be tracked with the participation of concerned communities to avoid susceptible sites if any exists. This activity will be implemented according to the standards or rules of the field using data from participatory appraisals, to avoid environmental impacts that could result, and therefore the recommended finding is *Negative Determination with Conditions*, as per 22 CFR 216.3(a)(2)(iii).

h) Cereal banks: The project will support the construction of small storage warehouses for grain and seed banks. Construction will occur within village limits, usually on an unoccupied parcel contributed by the village authorities. Construction materials are traditional (banco, or mud-brick) using the domed-roof wood-free architecture. Precautions will be taken for participative site selection to avoid destruction of historical areas, effect on lowlands, and steep slopes. The use of local material such as non-fired mud bricks, or rocks will be encouraged. Sound construction techniques will be used to avoid accidents. Construction works will be implemented out of workdays to limit impact of factors such as dust, noise, dug trenches on the neighboring users. No pesticides will be provided for warehouse management; instead, the project will advise alternative methods, such as aeration and stock rotation. This activity will not have a significant negative impact on the environment, and therefore is found to have a Negative Determination without condition as regards environmental impact as per 22 CFR 216.3(a)(2)(iii).

4. RECOMMENDED MITIGATION ACTIONS (including monitoring and evaluation)

4.1. Recommended IEE Determinations

Out of all activities of proposed Africare-ADRA MYAP, **41** activities qualify for categorical exclusion; **9** activities are recommended for Negative Determination without Conditions and **5** recommended for Negative Determination with Conditions.

A Categorical Exclusion per 22 CFR 216.2(c)(1)(i) is recommended for the monetization and distribution of agricultural commodities since this activity will have no negative effect on the environment.

A Categorical Exclusion is recommended for the following activities pursuant 22 CFR 216.2 (c) (2) (i), (ii), (iii), (v), (viii), (xi). These activities include development of training programs and technical assistance for capacity building when no physical effect on the environment is expected, improved practices for better maternal health and nutritional status of children under

five, village management committees, reinforce capacity of local public health personnel and traditional birth attendants.

A Negative Determination without Conditions, pursuant 22 CFR216.3 (a) (2),(viii), is recommended for the following activities such as: Activity 2.1.2: Construct/rehabilitate wells, Activity 2.2.11: Create and/or rehabilitate at least one community based health and nutrition training center in each major program area, Activity 3.1.3: Identify appropriate sustainable technologies, Activity 3.1.4: Facilitate access to critical farm inputs and technology, Activity 3.2.1: Develop and rehabilitate pastoral water points , Activity 3.2.4: Promote improved fodder harvesting and natural fodder conservation, Activity 3.3.1: Encourage the development of community cereal banks, Activity 3.3.5: Strengthen access of groups to appropriate transportation, Activity 3.4.4: Create water harvesting soil conservation technologies.

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A Negative Determination with Conditions is recommended for dams and ponds improvement as per 216.3 (a)(2)(iii). This negative determination is conditioned as follows:

The potential impacts of these activities may be: sedimentation due to run-off from areas being farmed; changes in water chemical balance due to run-off from farmed areas (potentially affecting the fish); and invasion of open areas and dry-farm land from the (wadis) stream bank. It is expected that overall environmental impact will be positive through accompanying activities. Nonetheless, this activity must ensure implementation of mitigating activities, such as tree plantation, stream bank stabilization, and training as well as monitoring systems to measure pond sedimentation and water quality.

A Negative Determination with Conditions is recommended for the construction of rural roads per 22 CFR 216.3(a)(2)(iii). This negative determination is conditioned as follows:

- The project shall make use of locally available road building materials, taken from abandoned lands or existing quarries.
- The road shall seek to follow existing paths, serving directly, or through a minimal walk,
- The throughway shall not affect prime farmland, and should not engender loss to individual farmers
- The road shall follow the surface gradient to avoid gullies or areas requiring costly structures, such as bridges (concrete aprons crossing shallow dry-stream beds will be constructed where necessary).
- The road planning shall identify areas and implement measures to avoid channeling of water or the creation of gullies,
- Road construction will be supervised by local semi-skilled technicians, using simple, locally available tools, such as hand compactors and water level.
- Road construction crews shall be composed of residents of the villages within a 5 km radius to ensure that participants can return home at night, thus reducing the need for (and impact from) temporary camps.

4.2. Mitigation Measures

Some of the proposed BOFSI activities will require mitigation measures to minimize potential negative environmental impacts. For all of the major categories of interventions, the following measures have been recommended. The progress of these activities will be monitored regularly, and reported according to plan.

4.2.1. Monitoring and Mitigation Measures for wells, dams rehabilitation or construction; development of land for agriculture and pond improvement

The project will first access the potential of each community to determine which dams, ponds and wells can be rehabilitated before launching new constructions. No new construction of water catchment ponds will be undertaken before a survey of existing infrastructure is done. Therefore, rehabilitation of existing structures will be a priority, before new construction begins. Survey of existing water points, thorough examination of village food security plans, and appraisal of water resources in intervention villages will be done and resource availability checked with requirements. Constructions sites will be carefully selected with the participation of communities after specific participatory rural appraisals, to identify all possible impacts of the infrastructure to be created, including soil tenure issues, nature of soils, vegetation and livestock.

Gardening wells will be constructed in most appropriate sites such as waterways to obtain high yields. Sites will be determined by avoiding rocky soils, and prioritizing low lands were the water table is high. Excavated soils will be disposed to prevent further erosion of soils and damage of arable soils around the infrastructure. Water from the new wells used for potable water will be tested prior to use. Skilled labor will be used to ensure that engineering and good construction practices for water catchments and ponds are used. Training will be provided in operation and maintenance of wells through the selection of a local water committee in each village.

Replanting of trees and grass cover will be implemented post construction. All tree planting activities should have the goal of replacing the ecological services and habitat disrupted by infrastructure activities and should include these critical elements in tree planting: (1) site/species match; (2) genetic selection of seed source; (3) site preparation; (4) timely planting; (5) weeding; and (6) protection from fire and grazing animals. Any NRM activity, including tree planting, needs to be seen as an economic activity that is productive for the end-user. The distribution of free tree seedlings in not endorsed as it is not sustainable.

The project will monitor (*wadi*) stream bank tree plantations with regard to field invasion of pioneer's species; ensure plowing of invading trees and/or harvest of sprawling growth. Agricultural soil productivity will be maintained or improved using organic fertilizers, and sound agricultural practices such as rotation, alternate planting of crops. Communities will be trained on the sustainable use of water. Appropriate training will be provided to the communities concerning water use management health and hygiene issues. Earthen structures such as ponds and dams will be monitored regularly by beneficiaries to design appropriate rehabilitation measures and prevent further erosion.

The project will evaluate each village to determine which well can be rehabilitated before starting construction of new ones. All well rehabilitation and construction will include appropriate drainage systems to deter formation of stagnant water. Fodder cultivation will be promoted in family plots to provide extra food for animals, particularly for fattening. Training in resource conservation and appropriate technology demonstrations and processing will be provided.

4.2.2 Monitoring and Mitigation Measures for Road Construction

The road mentioned on this design is actually the opening/ rehabilitation of feeder roads. Feeder road being narrow by nature do not need heavy equipment construction that could cause environmental problems. Feeder roads that link villages are less than 25 km, therefore low scale. Nevertheless, negative impacts can be minimized through careful attention in the initial planning and design stage. Most works are done using low technology and causing less environmental effects. Careful attention will be taken to avoid tree cutting, and rehabilitation will follow existing paths, and avoid susceptible sites. Participatory planning that identifies and implements mitigating measures to increase water infiltration, avoid channeling of water and the loss of productive land. Works are implemented by communities, therefore, construction crews are composed of residents of villages within a 5 km radius to reduce the need for temporary camps.

4.2.3. Monitoring and Mitigation Measures for Innovative and appropriate technologies

For potable water collection and management in villages without easy access to wells, the project will promote access to traditional and modern systems of purifying drinking water. In addition to the Environmental Guidelines for small-scale activities in Africa, Directives environnementales pour des activités à petite échelle en Afrique, another useful reference to consult for good water and sanitation design and implementation principles is the document, "Guidelines for the Development of Small Scale Rural Water Supply and Sanitation Projects in East Africa," by Catholic Relief Services and USAID (Title II), August, 2005. For a compendium of humanitarian assistance expertise in 1) Hygiene Promotion, 2) Water Supply, 3) Excreta Disposal, 4) Vector Control, 5) Solid Waste Management and 6) Drainage, consult the Sphere Handbook (2004): Humanitarian Charter and Minimum Standards in Disaster Response, Chapter 2: Minimum Standards in Water Supply, Sanitation and Hygiene Promotion.

Water quality testing is essential for determining that the water from a constructed water source is safe to drink and to determine a baseline so that any future degradation can be detected. Microbiological contamination of improved wells can often be prevented by aquifer protection measures and proper well design and maintenance. For example, wells for human consumption are readily contaminated when additionally used for livestock watering. Water management committee must ensure that separate wells are used for human and animal consumption. Simple and cost-effective sample kits for *E. coli* and fecal coliforms are available through a variety of manufacturers (e.g., Idexx Colilert or Coliscan Easygel).

Among the water quality tests which must be performed are tests for the presence of arsenic. Any USAID-supported activity engaged in the provision of potable water must adhere to

Guidance Cable State 98 108651, which requires arsenic testing. That 1998 cable also anticipates "practical guidelines on sampling and testing for arsenic" that were then under development. The EGAT Bureau completed these guidelines, and the Africa Bureau has packaged them in a document titled, "Guidelines for Determining the Arsenic Content of Ground Water in USAID-Sponsored Well Programs in Sub-Saharan Africa." The SO team must assure that the standards and testing procedures described in this guideline document are followed for potable water.

Initial water quality testing is the responsibility of the program to assure, but the program should also set in place capacities and responsibilities to provide reasonable assurance that ongoing water quality monitoring occurs. The standards for initial and ongoing testing -- types of contaminants for which testing should be conducted, testing methods, testing frequency, and issues such as public access to results should follow any applicable USAID guidance, as well as local laws, regulations and policies."

Other appropriate technologies will be introduced in food processing, and storage. Constructions of warehouses may be required along with the process of transforming local group into cooperatives and networks. Construction of communal latrines, water harvesting and soil conservation techniques may require appropriate technologies.

Food processing of food for added value could be an issue because of fuel wood. Training in resource conservation and appropriate technology demonstrations for alternative fuel sources will be provided. BOFSI will promote the use of fuel efficient stoves (i.e. clay stoves), during food preparation demonstration sessions. Local material will be used in priority in the construction of warehouses, latrines, while in phase with the national regulations regarding hygiene and sound environmental practices.

BOFSI acknowledges that promotion of efficient fuel use (i.e., chopping wood, using lids, etc) and/or fuel-efficient stoves is a labor-intensive process that requires IEC campaigns. For the efficient fuel use, an expert should provide training, so BOFSI can incorporate the techniques into the program and institutionalize the messages/training (which is much less technical and labor intensive than promoting adoption of new stoves). Experience shows that it is labor intensive to get a cookstove program to work well, a full IEC campaign is needed. In the development of Energy components, BOFSI will refer to the USAID report: *Fuel Efficient Stove Programs in IDP Setting- Summary Evaluation Report, Uganda* for program design and monitoring and evaluation considerations.
http://www.usaid.gov/our_work/economic_growth_and_trade/energy/publications/EGAT0020.PDF

4.3 Monitoring and Evaluation

During the five-year MYAP implementation period, Africare-ADRA/Chad are required to monitor and evaluate the project's success through pre-determined indicators, for each Strategic Objective. Also, the project management teams will be responsible for the above activities and will incorporate the monitoring of environmental indicators into these activities.

The objective of the environmental monitoring system is to provide basic information to the project staff and partners including beneficiaries on changes of environmental factors resulting from intervention schemes. The monitoring system will generate data that will feed appropriate changes in project planning, design, and implementation processes where environmental effects or impacts are likely to be of concern during the life of activity. Project staff will receive training to implement mitigation measures. The environmental impact will be measured using field surveys, and monitoring data that will assess changes overtime and provide feedback to project staff on how to make adjustments. Using selected indicators, changes will be made accordingly.

The Environmental Guidelines for small-scale activities in Africa will be used to assist Africare-ADRA/Chad and their local partners to incorporate into their activities appropriate mitigation and monitoring for a sound environment.

5. SUMMARY AND FINDINGS

5.1. Environmental Determinations

Based on the environmental review specified in this IEE, the following determinations are recommended:

I. A Categorical Exclusion is recommended for the following activities per 22 CFR 216.2 (c) (i), (ii), (iii), (viii), (x) and (xi):

Activity 1.1.1: Create food security committees (FSC) in all intervention villages
Activity 1.1.2: Create special interest in economic groups
Activity 1.1.3: Support the transformation of local groups into cooperatives and networks
Activity 1.1.4: Support existing regional training systems for functional literacy
Activity 1.1.5: Review training modules for extension agents and technical partners in French
Activity 1.1.6: Develop synthesis versions of all training modules and translate them
Activity 1.2.1: Train trainers in SCAP/RU and bi-annual reviews of the BOFSI methodology and program
Activity 1.2.2: Identify and monitor early warning indicators through annual PRAs
Activity 1.2.3: Create pilot SCAP/RU program in the Ouaddai
Activity 1.2.4: Organize exchange visits to observe SCAP/RU systems
Activity 1.2.5: Scale-up pilot project to the entire project area
Activity 2.1.1: Organize hydrologic surveys of proposed intervention areas
Activity 2.1.4: Introduce innovative and appropriate technologies for collection and management of water
Activity 2.1.5: Facilitate access to traditional and modern systems of purifying drinking water
Activity 2.1.6: Organize exchange visits to study innovative technologies for drinking water in arid zones

Activity 2.1.7: Train and retrain committees in water point management
Activity 2.2.1: Monitor the quality of health and nutrition services in the health centers and community
Activity 2.2.2: Train a pool of qualified government trainers in each health district
Activity 2.2.3: Train and retrain health workers on the design, execution and monitoring of community based health and nutrition programs
Activity 2.2.4: Train and retrain the BOFSI male and female extension agents on the design, execution and monitoring of community based health and nutrition
Activity 2.2.5: Develop and revise training modules on priority themes
Activity 2.2.6: Train and retrain village nutrition education volunteers
Activity 2.2.7: Train and retrain traditional birth attendants
Activity 2.2.8: Train and retrain health committees (COSAN), health management committees (COGES) and food security committees (FSC)
Activity 2.2.9: Train and retrain peer counselors for HIV/AIDS in collaboration with FOSAP
Activity 2.2.10: Strengthen the consideration of sanitation in all training modules and programs and promote public awareness of sanitation issues
Activity 2.2.12: Build BOFSI technical specialist's capacity to design and execute innovative community based programs
Activity 2.2.13: Pilot test foraine model of health center community outreach
Activity 2.3.1: Promote community based growth monitoring of children 0-24 months of age
Activity 2.3.2: Execute hearth programs (FARN) for moderately malnourished children in communities where a high percentage of malnourished children are identified by growth monitoring
Activity 3.1.1: Conduct baseline land use surveys in collaboration with the hydrological surveys programs
Activity 3.2.2: Promote good management of pastoral water points built/rehabilitated by the project
Activity 3.2.3:Train and retrain livestock auxiliaries
Activity 3.2.5: Promote cultivated pasture crops
Activity 3.2.6: Develop special programs to help vulnerable female-headed households reconstitute their herds
Activity 3.3.2: Promote the development of community based commercial information system
Activity 3.3.3: Train producers in the transformation, conservation and marketing of agro-pastoral products
Activity 3.3.4: Support the development of market networks that are oriented to female producers
Activity 3.3.6: Encourage the development of traditional credit systems (tontine)
Activity 3.3.7: Create/maintain/strengthen village savings and loan institutions
Activity 3.4.1: Build community capacity to design and execute FFW

II. A Negative Determination without Conditions is recommended for the following activities, per 22 CFR 216.3 (a) (2) (iii):

Activity 2.1.2. Construct/rehabilitate wells
Activity 2.2.11. Create and/or rehabilitate at least one community based health and

nutrition training center in each major program area
Activity 3.1.3. Identify appropriate sustainable technologies
Activity 3.1.4. Facilitate access to critical farm inputs and technology
Activity 3.2.1. Develop and rehabilitate pastoral water points
Activity 3.2.4. Promote improved fodder harvesting and natural fodder conservation
Activity 3.3.1. Encourage the development of community cereal banks
Activity 3.3.5. Strengthen access of groups to appropriate transportation
Activity 3.4.4. Create water harvesting soil conservation technologies

III. A Negative Determination with Conditions is appropriate and recommended for the following activities, per 22 CFR 216.3 (a) (2) (iii), (iii), (viii), (xi).

Activity 2.1.3. Construct/rehabilitate ponds/cisterns to collect survey water in villages/neighborhoods without easy access to wells
Activity 3.1.2. Develop land for irrigated agriculture
Activity 3.4.2. Construct communal latrines
Activity 3.4.3. Create/rehabilitate ponds
Activity 3.4.5. Construct and maintain rural access roads
Activity 3.4.6. Construct and rehabilitate dams

5.2. Conditions

The conditions and mitigation measures presented in this IEE are intended to ensure that all interventions proposed under this objective will be implemented and monitored to ensure that no significant environmental impacts will result. Implementation and monitoring will be consistent with the guidelines detailed in the *USAID's Environmental Guidelines for Small-Scale Activities in Africa: Environmentally Sound Design for Planning and Implementing Development Activities.*

The potential environmental impacts of the planned interventions related to increased agricultural productivity and access to potable water will be mitigated by adopting the measures outlined in Section 4.0 of this IEE.

Local implementing partners will be trained in the planning and management of all interventions, and will be made responsible for adopting mitigation and monitoring measures presented in this IEE. This commitment will be reflected in the formal sub-activity agreements between Africare and the local agencies. Regular monitoring and periodic evaluations of the BOFSI will incorporate measurements of environmental impacts. BOFSI will promote safe and limited use of agricultural chemicals and will adhere to USEPA and the Chadian Ministry of the Environment and Water policies on pest management requirements.

New interventions introduced into the activity which are substantially different from those presented in this IEE will be reviewed in accordance with the guidelines in the Environmental Documentation Manual and the procedures detailed in the *USAID's Environmental Guidelines for Small-Scale Activities in Africa: Environmentally Sound Design for Planning and Implementing Development Activities*.

6. ENVIRONMENTAL MANAGEMENT

Table 1: Overview of Mitigation and Monitoring of Negative Determination with Conditions Activities

Activity	Sub-Activity	Potential Environmental Impact and Causes	Mitigation Measures	Monitoring	Monitoring Frequency	Responsibility
Strategic Objective 1: Community capacity and early warning systems strengthened to reduce risk and vulnerability to food insecurity and poor health						
IR1.1: Community capacity to design, implement and monitor activities that reduce exposure to risk and decrease vulnerability enhanced						
	1.1.3.3. Construct housing for cooperatives (warehouses halls)	A small scale office constructed for a cooperative, generally located in community markets is used by cooperative members only twice a week. Some adverse effect on the environment listed in Chapter 9 of the Environmental Guidelines Page 12 to 14 may apply. Relevant impacts include the destruction of historical sites,	Precautions will be taken for participative site selection to avoid destruction of historical areas, effect on lowlands, and steep slopes. The use of local material such as non-fired mud bricks, or rocks will be encouraged. Sound construction techniques will be used to avoid accidents. Construction works will be implemented out of workdays to limit impact of factors such as dust, noise, dug trenches on the market users. Strategies for the re-use or diversion of "gray" water where possible from showers and ablution centers for localized gardens, etc, as in graywater irrigation: http://csbe.org/graywater/graywater_guidelines.htm			

Activity	Sub-Activity	Potential Environmental Impact and Causes	Mitigation Measures	Monitoring	Monitoring Frequency	Responsibility
		increased erosion, destruction of trees or vegetation to direct construction or increased human frequentation, contamination of soil or water in case latrines are constructed, nuisance from airborne dust or extract noise from constructions works, or quarries. In case of fired bricks, it requires firewood.	→ Include these critical elements in tree planting: (1) site/species match; (2) genetic selection of seed source; (3) site preparation; (4) timely planting; (5) weeding; and (6) protection from fire and grazing animals.			
Strategic Objective 2: Human health, related to nutrition, potable water, and health education, improved						
IR 2.1. Sustainable systems for drinking water created and maintained						
2.1.2. Construct/rehabilitate wells		According to Chapter 16 of the Environmental Guideline, some possible adverse	Precautions will be taken to encourage the use of displaced soil material for the improvement of housing, disposal downstream to not cause erosion, closure open pits where the construction was not successful.			
	2.1.2.1. Borehole wells			Measurement of water table evolution on selected sites	Monthly	Project staff Environment Partner

Activity	Sub-Activity	Potential Environmental Impact and Causes	Mitigation Measures	Monitoring	Monitoring Frequency	Responsibility
	2.1.2.2. Open wells	effect of water infrastructure are listed from page 6 to 7. Possible effects of such infrastructure in the project intervention area are depletion of fresh water resources, creation of stagnant water, soil degradation, and supply of contaminated water. Depletion of water table Displacement of soil material that could modify arable land composition, and fertility, result in increase erosion if not well disposed, open pits, potential harmful water chemicals, and	Appropriate surface development will avoid the stagnation of water. Livestock watering places will be constructed to collect waste water. A protection wall will be constructed for each well to avoid direct access to animals. Chemical and bacteriological tests of water will be required prior to consumption. Wise management of water resources will be required if scarce.	Erosion monitoring, Water quality analysis data for each well Measurement of water table evolution	Whenever a well is constructed or rehabilitated Monthly on selected sites	Project staff Partners

Activity	Sub-Activity	Potential Environmental Impact and Causes	Mitigation Measures	Monitoring	Monitoring Frequency	Responsibility
		depletion of water table.				
2.1.3. Construct/rehabilitate ponds/cisterns to collect survey water in villages/neighborhoods without easy access to wells		The construction may cause cutting of trees on the sites. Surface water could yield mosquitoes that can transmit malaria; Untreated water could contain harmful germs. Ponds construction may cause increased incidence of infectious water-borne diseases such as cholera, non-infectious disease, water-enabled diseases such as malaria, schistosomiasis or bilharzias.	In case vegetation was destroyed during construction, natural trees will be replanted. → Include these critical elements in tree planting: (1) site/species match; (2) genetic selection of seed source; (3) site preparation; (4) timely planting; (5) weeding; and (6) protection from fire and grazing animals. Motivate communities to use mosquito nets to avoid malaria. If support for acquisition, distribution or marketing of insecticide treated bednets (ITNs), then use WHO-approved brands of long-lasting treated nets and adhere to all relevant stipulations made in the Programmatic Environmental Assessment for Insecticide-Treated Materials in USAID Activities in Sub-Saharan Africa (ITM PEA). If re-dipping bednets, then must submit Pesticide Evaluation Report and Safe Use Action Plan (PERSUAP) to BEO/DCHA for approval. Promote the use of traditional and simple systems of purifying drinking water. The quality of water from these systems will be ensured by testing for chemical	Monitoring of tree nurseries Monitoring of tree planting Access aptitudes and practices in malaria prevention Access aptitudes and practices in water treatment	Yearly Yearly During household survey at baseline, midterm and final	Project staff Project partners

Activity	Sub-Activity	Potential Environmental Impact and Causes	Mitigation Measures	Monitoring	Monitoring Frequency	Responsibility
			(Arsenic) and bacteriological contamination as in Section . 4.2.3. Monitoring and Mitigation Measures for Innovative and appropriate technologies.			
IR2.2: Backstopping and networking between government health structures and community based health and nutrition initiatives						
	b) Technology Kit: technology for reducing the burden of domestic tasks (wood conserving stoves, grinding mills for peanuts, improved water purification systems)	No adverse environmental impact anticipated. The project expects wood stoves to improve the efficiency of energy use, reduce wood consumption. Mill for peanut uses human power. Purifying systems will improve water hygiene.	N/A	Positive effects and impacts could be monitored through KAP surveys	Baseline, ,midterm and final surveys	Project staff and partners
2.2.7. Train and retrain traditional birth attendants (2 per village)		Under Chapter 8 of the Environmental guidelines provides details on the management of medical waste. Although training	The environmental guideline recommends birth attendant practice hygiene during their work, and that medical waste be disposed under ground or incinerated to avoid unwanted impacts.			
	2.2.7.1. Basic training (2 wks/year)					
	2.2.7.2. Retraining (1 wk/year)					
	2.2.7.3. Equipment					
	a) Professional kit: birth attendant					

Activity	Sub-Activity	Potential Environmental Impact and Causes	Mitigation Measures	Monitoring	Monitoring Frequency	Responsibility
	equipment and aprons	of birth attendants provides benefits to communities, and in its-self may classify for categorical exclusion, it can also unintentionally do great harm to the environment if waste such used hand gloves, blades, alcohol containers, pairs of scissors, blood, and others human tissue are poorly managed. They can be dangerous, if handled, treated or disposed of incorrectly, because it can spread disease, poisoning people, livestock, wild animals, plants and whole ecosystems.				
	b) Technology kit/ equipment for reducing the burden of domestic tasks (improved stoves, grinding mills, water filters, latrines)					
	2.2.7.4. Distribute iron supplements to pregnant women and Vitamin A to lactating women (n= number of villages)					
2.2.11. Create and/or rehabilitate		Construction or	Precautions will be taken for participative site			

Activity	Sub-Activity	Potential Environmental Impact and Causes	Mitigation Measures	Monitoring	Monitoring Frequency	Responsibility
at least one community based health and nutrition training center in each major program area		rehabilitation activities could have adverse effect on the environment listed in Chapter 9 of the Environmental Guidelines Page 12 to 14 may apply. Relevant impacts include the destruction of historical sites, increased erosion, destruction of trees or vegetation to direct construction or increased human frequentation, contamination of soil or water in case latrines are constructed, nuisance from airborne dust or extract noise from constructions	selection to avoid destruction of historical areas, effect on lowlands, and steep slopes. The use of local material such as mud bricks, or rocks will be encouraged. Sound construction techniques will be used to avoid accidents. Construction works will be implemented out of workdays to limit impact of factors such as dust, noise, trenches on the health center users.			

Activity	Sub-Activity	Potential Environmental Impact and Causes	Mitigation Measures	Monitoring	Monitoring Frequency	Responsibility
		works, or quarries. In case of fired bricks, it requires firewood				
SO3: Livelihood systems strengthened and made more resilient						
IR3.1: Community capacity for sustainable increases in crop production enhanced						
3.1.2. Develop land for irrigated agriculture						
	3.1.2.1. Construct/Rehabilitate dams	Dam construction for irrigation purpose may induce several environmental problems such destruction of natural habitat, degradation of natural vegetation, freshwater diversion from lakes, displacement of populations, biodiversity lost, water quality problems, disturb livestock movement, colonization of exotic species and	Mitigation actions include participatory site selection to avoid sensible habitats, or historical sites, use of good irrigation management since most dams will be infiltration dam instead of water capture. In case of tree cutting during construction, natural trees will be replanted. → Include these critical elements in tree planting: (1) site/species match; (2) genetic selection of seed source; (3) site preparation; (4) timely planting; (5) weeding; and (6) protection from fire and grazing animals. The project will motivate communities to use mosquito nets to avoid malaria. If support for acquisition, distribution or marketing of insecticide treated bednets (ITNs), then use WHO-approved brands of long-lasting treated nets and adhere to all relevant stipulations made in the Programmatic Environmental Assessment for Insecticide-Treated Materials in USAID Activities in Sub-Saharan	Monitoring of tree nurseries Monitoring of tree planting Access aptitudes and practices in malaria prevention Access aptitudes and practices in water treatment	Yearly Yearly During household survey at baseline, midterm and final	Project staff Project partners

Activity	Sub-Activity	Potential Environmental Impact and Causes	Mitigation Measures	Monitoring	Monitoring Frequency	Responsibility
		competition with native species, soil, human health, and social problems.	Africa (ITM PEA). If re-dipping bednets, then must submit Pesticide Evaluation Report and Safe Use Action Plan (PERSUAP) to BEO/DCHA for approval. Use of traditional and simple systems of purifying water before use, including water testing. Use participatory methods in selecting appropriate sites to avoid conflicts.			
	3.1.2.2. Construct rehabilitate garden wells (women HH heads to be given priority access)	Displacement of soil material that could modify arable land composition, and fertility, result in increase erosion if not well disposed, open pits, potential harmful water chemicals, and depletion of water table.	Use of displaced soil material for the improvement of housing, disposal downstream to not cause erosion, closure open pits where the construction was not successful or use for latrine. Chemical and bacteriological test of water, before consumption , and good management of water resources if scarce.	Erosion monitoring, Water quality analysis data for each well Measurement of water table evolution	Whenever a well is constructed or rehabilitated Monthly on selected sites	Project staff Partners
3.1.3. Identify appropriate sustainable technologies						
	3.1.3.1. Organize demonstration trials of appropriate sustainable agricultural technologies	Continuous chemical fertilizers could acidify the soils Animal traction	Only organic fertilizers will be promoted Contour farming along with water harvesting techniques will be promoted The project will not fund nor encourage the use of	Crops yields	Yearly	Project staff and partners

Activity	Sub-Activity	Potential Environmental Impact and Causes	Mitigation Measures	Monitoring	Monitoring Frequency	Responsibility
		could increase soil erosion Pesticides could be harmful to human and animal resources Seed used in these demonstrations are locally selected or purchased from Research Institutions under Government control. The seed is not coated with pesticides and therefore hold low risk for the environment.	pesticides to manage insects since these technologies could be dangerous for the environment and the community. In the project intervention area such activity of pest management is taken by the governmental specialized services and funded by FAO			
IR3.2: Community capacity for sustainable increases in livestock productivity enhanced						
3.2.1 Develop and rehabilitate pastoral water points (n=# of water points)		Tree cutting, modification of natural habitat, displacement of soils, modification of water flow, erosion, Surface water	Replant trees that were cut during construction → Include these critical elements in tree planting: (1) site/species match; (2) genetic selection of seed source; (3) site preparation; (4) timely planting; (5) weeding; and (6) protection from fire and grazing animals.	Monitoring of tree nurseries Monitoring of tree planting Access aptitudes and practices in	Yearly Yearly During household survey at baseline, midterm and final	Project staff Project partners

Activity	Sub-Activity	Potential Environmental Impact and Causes	Mitigation Measures	Monitoring	Monitoring Frequency	Responsibility
	3.2.1.1. # of wells rehabilitated	could yield mosquitoes that can transmit malaria	Motivate communities to use mosquito nets to avoid malaria. If support for acquisition, distribution or marketing of insecticide treated bednets (ITNs), then use WHO-approved brands of long-lasting treated nets and adhere to all relevant stipulations made in the Programmatic Environmental Assessment for Insecticide-Treated Materials in USAID Activities in Sub-Saharan Africa (ITM PEA). If re-dipping bednets, then must submit Pesticide Evaluation Report and Safe Use Action Plan (PERSUAP) to BEO/DCHA for approval. Promote the use of traditional and simple systems of purifying drinking water. The quality of water from these systems will be ensured by testing for chemical (Arsenic) and bacteriological contamination as in Section . 4.2.3. Monitoring and Mitigation Measures for Innovative and appropriate technologies. Fencing of ponds to limit direct access by livestock	malaria prevention Access aptitudes and practices in water treatment Water quality test and observation of water turbidity	Refer to main activity above	Refer to main activity above
	3.2.1.2. # of wells built	Untreated water could contains harmful germs			Refer to main activity above	Refer to main activity above
	3.2.1.3. # of ponds built or rehabilitated	Ponds rehabilitation is expected to improve water quality by limiting direct access of livestock to waterways (less contamination), and erosion reduction			Refer to main activity above	Refer to main activity above
3.2.4. Promote improved fodder harvesting and natural fodder conservation (n= village)		Reduction of vegetal cover by reducing weed seedlings	Strip harvesting of forage to spare necessary weed seed	Observations of producers aptitudes and practices	Yearly	Project staff and partners
IR3.3: Household capacity to minimize post harvest losses and diversify income earning opportunities increased						
3.3.1. Encourage the development of community cereal banks		Use of imported construction materials	Promotion of local material use instead of imported	Number of units constructed	yearly	Project staff and partner

Activity	Sub-Activity	Potential Environmental Impact and Causes	Mitigation Measures	Monitoring	Monitoring Frequency	Responsibility
				using local materials		
	3.3.1.1. Facilitate the construction of grain banks (with member inputs (n=villages)	Use of imported construction materials	Promotion of local material use instead of imported	Number of units constructed using local materials	yearly	Project staff and partner
3.3.5. Strengthen access of groups to appropriate transportation		No adverse environmental impact anticipated since small scale units using animal traction or human power	Insure technologies use only biological or renewable power			
IR3.4: Safety net and emergency programs that vulnerable households need to build assets and avoid asset erosion strengthened						
	3.4.2.2. Construct communal locations identified with FSC (e.g. growth monitoring locations, schools etc..)	Sites could be facilitate the multiplication of flies or other harmful insects, or contaminated food	Appropriate cleaning Protection against direct sunlight Appropriate technology as ventilated pits Access to water Soap use for hand washing	Number of units KAP of beneficiaries	Monthly	Project staff and partners
3.4.3. Create/rehabilitate ponds		Tree cutting, modification of natural habitat, displacement of soils, modification of water flow, erosion,	Replant trees that were cut during construction → Include these critical elements in tree planting: (1) site/species match; (2) genetic selection of seed source; (3) site preparation; (4) timely planting; (5) weeding; and (6) protection from fire and grazing animals.	Monitoring of tree nurseries Monitoring of tree planting Access aptitudes and	Yearly Yearly During household survey at baseline, midterm and	Project staff Project partners

Activity	Sub-Activity	Potential Environmental Impact and Causes	Mitigation Measures	Monitoring	Monitoring Frequency	Responsibility
		Surface water could yield mosquitoes that can transmit malaria Untreated water could contains harmful germs Ponds rehabilitation is expected to improve water quality by limiting direct access of livestock to waterways (less contamination), and erosion reduction	The project will motivate communities to use mosquito nets to avoid malaria. If support for acquisition, distribution or marketing of insecticide treated bednets (ITNs), then use WHO-approved brands of long-lasting treated nets and adhere to all relevant stipulations made in the Programmatic Environmental Assessment for Insecticide-Treated Materials in USAID Activities in Sub-Saharan Africa (ITM PEA). If re-dipping bednets, then must submit Pesticide Evaluation Report and Safe Use Action Plan (PERSUAP) to BEO/DCHA for approval. Promote the use of traditional and simple systems of purifying drinking water. The quality of water from these systems will be ensured by testing for chemical (Arsenic) and bacteriological contamination as in Section . 4.2.3. Monitoring and Mitigation Measures for Innovative and appropriate technologies. Fencing of ponds to limit direct access by livestock	practices in malaria prevention Access aptitudes and practices in water treatment Water quality test and observation of water turbidity	final	
3.4.4. Create water harvesting soil conservation technologies		No adverse effects expected Positive impacts on water harvesting and water tale.	Appropriate construction techniques	Crop yields Water table monitoring	yearly	Project staff and partners
3.4.5. Construct and maintain rural access roads						
	3.4.5.1. Construct rural	Construction of	The road mentioned on this design is actually the	Construction	during	Project staff

Activity	Sub-Activity	Potential Environmental Impact and Causes	Mitigation Measures	Monitoring	Monitoring Frequency	Responsibility
	roads	roads may increase soil erosion, increase problems of water quality, deplete water resources and harm water living resources. Roads and quarries may also create artificial ponds that breed mosquitoes or harbor water-borne diseases. Constructed roads may alter hydrology by acting as dams, deforestation, damage to scenic quality and Tourism, adverse impacts on human health and safety, changes to local culture and society. Potential concerns in human health	opening/ rehabilitation of feeder roads. Feeder road being narrow by nature do not need heavy equipment construction that could cause the many environmental problem s. Many of the impacts can be avoided or minimized through careful attention in the initial planning and design stage. Most works are done using low technology and causing less environmental effects. Careful attention will be taken to avoid tree cutting, and rehabilitation will follow existing paths, and avoid susceptible sites. → Include these critical elements in tree planting: (1) site/species match; (2) genetic selection of seed source; (3) site preparation; (4) timely planting; (5) weeding; and (6) protection from fire and grazing animals. Add roads guide….	monitoring	activity	and partners

Activity	Sub-Activity	Potential Environmental Impact and Causes	Mitigation Measures	Monitoring	Monitoring Frequency	Responsibility
		include dust and noise, and exposure to sexually transmitted diseases.				
3.4.6. Construct and rehabilitate dams		Tree cutting, modification of natural habitat, displacement of soils, modification of water flow, erosion, Surface water could yield mosquitoes that can transmit malaria Untreated water could contains harmful germs Ponds rehabilitation is expected to improve water quality by limiting direct access of livestock to	Replant trees that were cut during construction The project will motivate communities to use mosquito nets to avoid malaria. If support for acquisition, distribution or marketing of insecticide treated bednets (ITNs), then use WHO-approved brands of long-lasting treated nets and adhere to all relevant stipulations made in the Programmatic Environmental Assessment for Insecticide-Treated Materials in USAID Activities in Sub-Saharan Africa (ITM PEA). If re-dipping bednets, then must submit Pesticide Evaluation Report and Safe Use Action Plan (PERSUAP) to BEO/DCHA for approval. Promote the use of traditional and simple systems of purifying drinking water. The quality of water from these systems will be ensured by testing for chemical (Arsenic) and bacteriological contamination as in Section . 4.2.3. Monitoring and Mitigation Measures for Innovative and appropriate technologies. Fencing of ponds to limit direct access by livestock	Monitoring of tree nurseries Monitoring of tree planting Access aptitudes and practices in malaria prevention Access aptitudes and practices in water treatment Water quality test and observation of water turbidity	Yearly Yearly During household survey at baseline, midterm and final	Project staff Project partners

Activity	Sub-Activity	Potential Environmental Impact and Causes	Mitigation Measures	Monitoring	Monitoring Frequency	Responsibility
		waterways (less contamination), and erosion reduction				

Table 2: Table of Status of BOFSI Environmental M&E Indicators over the LOA (BOFSI, FY08-FY12)

Indicator	Baseline FY 08	FY08 Target	FY08 Achieved	FY08 Avs.T	FY 09 Target	FY 09 Achieved	FY 09 AvsT	FY10 Target	FY10 Achieved	FY 10 AvsT	FY 11 Target	FY 11 Achieved	FY 11 Avs.T	FY 12 Target	FY 12 Achieved	FY12 AvsT	LOA Target
SO1																	
Impact Indicator 1: % of HH that adopted improved practices in malaria prevention	OC= 20 OT= 20	OC= 20 OT= 20						OC= 30 OT= 35						OC= 60 OT= 70			
	BWF=20 BE=20	BWF=20 BE=20						BWF=30 BE=30						BWF=50 BE=50			
Impact Indicator 2: % of HH that adopted improved practices in potable water treatment	OC=35 OT= 35	OC=35 OT= 35						OC= 50 OT= 50						OC= 80 OT= 85			
	BWF=35 BE=35	BWF=35 BE=35						BWF=50 BE=55						BWF=80 BE=80			
Impact Indicator 3: % of wells which water quality agree with WHO standards	OC= 15 OT= 15	OC= 15 OT= 15						OC= 40 OT= 50						OC= 70 OT= 80			
	BWF=15 BE=15	BWF=15 BE=15						BWF=40 BE=40						BWF=70 BE=70			
Impact Indicator 4: Millet yield	OC= 890 OT=890	OC= 890 OT=890						OC= 900 OT= 900						OC= 910 OT= 910			
	BWF=244 BE=244	BWF=244 BE=244						BWF=250 BE=250						BWF=300 BE=300			
Impact Indicator 5: Sorghum yield	OC= 1200 OT= 1200	OC= 1200 OT= 1200						OC= 1200 OT= 1300						OC=1250 OT= 1350			
	BWF=290 BE=290	BWF=290 BE=290						BWF=300 BE=300						BWF=400 BE=400			
Impact Indicator	OC= 800 OT= 800	OC= 800 OT= 800						OC= 800 OT= 820						OC= 820 OT= 850			

Indicator	Baseline FY 08	FY08 Target	FY08 Achieved	FY08 Avs.T	FY 09 Target	FY 09 Achieved	FY 09 AvsT	FY10 Target	FY10 Achieved	FY 10 AvsT	FY 11 Target	FY 11 Achieved	FY 11 Avs.T	FY 12 Target	FY 12 Achieved	FY12 AvsT	LOA Target
6: Peanut yield	BWF=350 BE=350	BWF=350 BE=350						BWF=400 BE=400						BWF=500 BE=500			
Monitoring Indicator 1: Depth of the water table in selected sites (meters)	OC= 30 OT= 30	OC= 30 OT= 30			OC= 25 OT= 25			OC= 20 OT= 20			OC= 15 OT= 15			OC= 10 OT= 10			
	BWF=50 BE=50	BWF=50 BE=50			BWF=45 BE=45			BWF=40 BE=40			BWF=35 BE=35			BWF=30 BE=30			
Monitoring Indicator 2: Number of trees planted **and # hectares reforested**	OC= 0 OT= 0	OC= 0 OT= 0			OC= 5000 OT= 4000			OC= 7000 OT=6000			OC= 9000 OT= 7000			OC= 12000 OT= 9000			
	BWF=0 BE=0	BWF=0 BE=0			BWF=500 BE=300			BWF=1000 BE=700			BWF=1500 BE=1000			BWF=2000 BE=1400			
Monitoring Indicator 3: Number of HH that use energy efficient stoves for food cooking	OC= 0 OT= 0	OC= 0 OT= 0			OC= 500 OT= 500			OC= 1000 OT= 1000			OC= 1200 OT= 1300			OC= 1400 OT= 1500			
	BWF=0 BE=0	BWF=0 BE=0			BWF=450 BE=200			BWF=800 BE=500			BWF=1000 BE=700			BWF=1300 BE=900			