



**I. COVERSHEET FOR ENVIRONMENTAL MITIGATION PLAN & REPORT  
(UMBRELLA EMPR: AGRICULTURAL DEVELOPMENT)**

**USAID MISSION SO # and Title:** \_\_\_\_\_

**Title of IP Activity:** \_\_\_\_\_

**IP Name:** \_\_\_\_\_

**Funding Period:** FY\_\_\_\_\_ - FY\_\_\_\_\_

**Resource Levels (US\$):** \_\_\_\_\_

**Report Prepared by:** Name: \_\_\_\_\_ Date: \_\_\_\_\_

**Date of Previous EMPR:** \_\_\_\_\_ (if any)

**Status of Fulfilling Mitigation Measures and Monitoring:**

\_\_\_\_\_ Initial EMPR describing mitigation plan is attached (Yes or No).

\_\_\_\_\_ Annual EMPR describing status of mitigation measures is established and attached (Yes or No).

\_\_\_\_\_ Certain mitigation conditions could not be satisfied and remedial action has been provided within the EMPR (Yes or No).

**USAID Mission Clearance of EMPR:**

**Contracting Officer's Technical Representative:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Mission Environmental Officer:** \_\_\_\_\_ **Date:** \_\_\_\_\_  
( )

**Regional Environmental Advisor:** \_\_\_\_\_ **Date:** \_\_\_\_\_  
( )

**List of CHF Haiti projects covered in this UEMPR (Agricultural Development)**

## **1. Background, Rationale and Outputs/Results Expected:**

Two-thirds of the working population in Haiti receives their total income from farming. With cash crops such as mangoes, coffee, cacao, sisal, essential oils (such as vetiver), and cotton, Haiti's soil components and environmental factors give it great potential for expanded production. There is, therefore, a great need throughout Haiti for improved agricultural development as a key driver of economic growth.

Haiti remains a food deficit country, and relies heavily on imported food. According to the United Nations World Food Program, 48 percent of national consumed food is imported, 47 percent is produced locally while food assistance fills 5 percent of the national needs. According to the Haitian Encyclopedia of the Nations, over 33% of the country's land has been used for crop and feed production, even with only around one-third of the country's land suitable for cultivation. Permanent pasture land amounts to around 18% of the total land area. Since population growth has surpassed agricultural growth since the 1970s, and natural disasters such as the 1985 drought and both the 2004 and 2008 hurricane systems, production of important staple crops such as corn, rice, and beans has been severely affected.

Production of coffee at the turn of the century totaled 28,000 tons, a significant decrease compared to the 43,600 tons produced in 1962, according to the Haitian Encyclopedia of the Nations. The second major cash crop is sugarcane, but production has also been declining; in 1976, Haiti became a net importer of sugar. In tons produced, bananas are the next largest crop, then corn, rice, sorghum, dry beans, and cocoa beans. Other crops commonly grown in Haiti are mango, tomatoes, cucurbit, pineapple, plantain, pepper, pumpkin, yams, and basil. On most Haitian farms, the common setup involves numerous small plots averaging slightly over one hectare (2.5 acres) per family, where most food crops and a few other crops for cash sale, are grown by peasants; few farms exceed 12 hectares (30 acres).

CHF's USAID/KATA program is an \$81 million, 4-year program that is designed to:

- Enable access to economic opportunities that provide people with dignity, income and the chance to contribute to the economic development of their country
- Enhance the government's ability to effectively respond to the needs of its constituents
- Provide improved access to capital, market linkages and investments for Haiti's micro, small and medium enterprises
- Improve agricultural development and export programs

**Through the Agricultural Development projects, CHF hopes to achieve the following goals:**

- 1) Develop new skills within the groups of farmers who receive training i.e. pasture management, veterinary care, sustainable farming practices, IPM
- 2) Promote the development and structuring of farmer cooperative organizations
- 3) Develop partnerships with other organizations/institutions interested in the livestock sector
- 4) Promote food security in rural parts of Haiti

## **2. Activity Description**

This EMPR covers all activities directly related to agricultural and livestock development projects, including agricultural trials, demonstration plots, training, and market linkages. Activities will focus largely on agricultural and livestock training using the Farmer Field School (FFS) methodology, in addition to provision of tools and inputs, post-harvest processing, and animal health activities.

Activities specific to agricultural development include:

- a) Provision of small-scale farming tools and machinery
- b) Seed improvement
- c) Farmer Field Schools on:
  - a. Crop diversification
  - b. Integrated pest management
  - c. Soil quality management
  - d. Post-harvest processing

Activities specific to improved livestock management include:

- a) Pastureland management
- b) Installation of fencing
- c) Farmer Field Schools on:
  - a. Improved grazing techniques
  - b. Livestock water management
- d) Establishment of Community Animal Health Workers and training on livestock health and disease management

Any activities related to irrigation or soil conservation are discussed under the Irrigation and Soil Conservation EMPR. Economic development activities such as dairy operation are covered within the Institutional and Economic Development EMPR.

## **3. Environmental Baseline:**

Project will be implemented in 5 departments of Haiti, Petit Goâve, Port-au-Prince, Saint Marc, Gonaïves and Cap Haïtien. Agricultural and livestock activities will be carried out in areas with existing cultivation or livestock production. If agricultural or livestock activities represent a change in land use or will include an alteration of land, an EA will be carried out.

Due to the increase of hurricane activity in recent years and the severe damages and loss of life that have resulted, the USAID/KATA program focuses much of its activity on watershed management and infrastructure improvement/rehabilitation activities. In USAID's 2007 report "Environmental Vulnerability in Haiti," Glenn Smucker and team point out that many of the environmental problems in Haiti can be attributed to, "acute poverty, rapid population growth and unplanned urbanization"(Smucker, iii). These factors have created a much higher and concentrated demand for firewood and charcoal among other natural resources and services in and around urban centers.

Not only does the indoor burning of charcoal worldwide account for the death of nearly 800,000 children and 500,000 women annually (WHO, 2006), but it is a main factor driving the deforestation of hill and mountainsides in Haiti. According to Richard Haggerty's country study on Haiti from 1989, in 1925, Haiti had 60% of its original forest covering the country. Since then, the population has cut down all but an estimated 2% of its original forest cover, and in the process has destroyed fertile farmland soils, contributing to desertification. Most important is the hillside deforestation, which has caused a slew of flooding and mudslide problems for cities and other communities located in watershed and flood plain areas.

During the hurricane seasons of both 2004 and 2008, the flooding and mudslides in Gonaives provide examples of the types of indirect problems that result from hillside deforestation and poor watershed management. According to [earthobservatory.nasa.gov](http://earthobservatory.nasa.gov), "in September 2004, more than 2,500 people died when Tropical Storm Jeanne unleashed torrential rain on northeastern Haiti...The disaster was repeated in September 2008, when a string of storms—Gustav, Hanna, and Ike—drenched Haiti. Though the resulting floods were as extensive as in 2004, the death toll was not as great. As of September 15, 423 people had been reported dead, 50 were missing, and more than 100,000 were in shelters, said the United States Agency for International Development (USAID)."

The mudslides and flooding in Gonaives serve as a grim warning to the possibilities of what could be in the nation's capital, Port-Au-Prince, as both cities are located in large watersheds. Such floods and mudslides can contribute to a slew of other health, social and environmental problems ranging from road blockage, to drinking water contamination and disease spread.

The average annual rainfall is 140 to 200 centimeters, but it is unevenly distributed. Heavier rainfall occurs in the southern peninsula and in the northern plains and mountains. Rainfall decreases from east to west across the northern peninsula. The eastern central region receives a moderate amount of precipitation, while the western coast from the northern peninsula to Port-au-Prince, the capital, is relatively dry. Some regions have two rainy seasons, lasting from April to June and from August to October, whereas other regions experience rainfall from May to November. Annual variations of precipitation can cause droughts, widespread crop failures, and famine.

Temperatures are almost always high in the lowland areas, ranging from 15° C to 25° C in the winter and from 25° C to 35° C during the summer. Haiti is located on the leeward side of Hispaniola, which means that the influence of humid trade winds is not as great as in The Dominican Republic. The more humid districts are found on the northern and eastern slopes of the mountains.

Only 54% of the population in Haiti has broad definition access to potable water, while only 30% have access to sanitation coverage, according to a WHO/UNICEF report in 2006.

According to CIA world fact book, about 66% of all Haitians work in the agricultural sector, which consists mainly of subsistence farming on a small scale. Mangoes and coffee are the

country's most important exports; however, agriculture only makes up 30% of the country's GDP.

In order to alleviate the pressures put upon the Haitian population due to the level of environmental degradation in the country, as well as promote long-term sustainable development as to allow for reforestation and environmental recuperation, development agencies must, "be part of an integrated approach, directly linking natural resource management with other pertinent sectors such as early warning, urban planning, reproductive health, and job creation programs" (Smucker, v).

#### **4. Evaluation of Environmental Impact Potential of Activities (Table 2):**

##### *Soil erosion:*

Soil erosion is a potential impact of agricultural and livestock activities, particularly on hillsides, if appropriate soil conservation techniques are not employed.

##### *Soil quality degradation:*

Over-cultivation without crop rotation with nitrogen-fixing crops and adequate fertilizer management may lead to loss of soil fertility.

##### *Agricultural pests:*

Haiti's agriculture faces significant pest challenges, particularly related to insect and fungal pests. Promotion of cultural and manual pest control techniques and plant health is necessary to ensure crop survival and minimize the need for chemical pesticides. If any pesticides are to be recommended by the program, a Pesticides Evaluation Report and Safer Use Action Plan (PERSUAP) will be carried out.

##### *Deforestation:*

Expansion of agricultural or livestock activities could lead to land clearing and deforestation.

##### *Depletion of surface and groundwater:*

Intensive agriculture and livestock can alter hydrology, leading to depletion of freshwater resources.

##### *Contamination and human health risk from veterinary wastes:*

Sharps and medications could contaminate the environment and pose human health risks, especially if used in large-scale vaccination and parasite eradication programs.

#### **1. Environmental Mitigation Actions (Tables 2 & 3) (this section is part of the annual EMR, but not the initial):**

CHF will implement the following strategies to mitigate the potential impacts described above:

- Coordinate with the Ministry of Agriculture, Natural Resources and Rural Development (MARNDP) and USAID to implement recommended best agricultural and environmental practices;
- Promote plant health, cultural and manual pest control before pesticide use;

- Implement soil conservation measures where necessary to combat soil erosion, as described in the Irrigation and Soil Conservation EMPR;
- Promote proper disposal of veterinary waste;
- Carry out Environmental Assessments for any agricultural or livestock projects that are large in scale, that will alter current land use patterns, or that are to be located in otherwise sensitive areas.
- Monitor agricultural and livestock projects, and make adjustments to the mitigation plan when unforeseen impacts arise or when mitigation measures are insufficient to reduce impacts.

Tables 2 and 3 provide additional detail on the mitigation measures and monitoring strategy to be implemented by CHF Haiti.

### III-A. Environmental Screening Form (Table 1):

\*A screening form will be filled out for each individual project that falls under this UEMPR

### III-B. Identification of Mitigation Plan (Table 2)

→ Enter the Question/Row # of the potential negative impacts with check marks in Column A (Table 1) and complete table below for mitigation measures to reduce or eliminate the issue.

Activity/Impact/Mitigation Table (USAID/KATA) - AGRICULTURAL DEVELOPMENT			
Project Type	Activity	Description of Impact	Prescribed mitigation measures
	i. Provision of small farming machinery and training on use	1. With a large scale conversion of uncultivated land to agricultural land, the chances for soil erosion, especially on hillsides, increases	a. Promote low-till agriculture and minimize machinery use
			b. Implement appropriate soil conservation technologies (see Irrigation and Soil Conservation EMPR)
			c. Train beneficiaries on environmental and agricultural best practices
		2. Inadequate maintenance of machinery can reduce productivity, fuel efficiency and environmental impacts	a. Train users on machinery maintenance and ensure access to maintenance and repair parts/materials
			b. Train users on proper used-oil disposal
	ii. Crop diversification	3. Crop failure of newly introduced crops due to pests or inadequate local conditions	a. Conduct trials/establish demonstration plots under local conditions to ensure success before implementing on a large scale



		4. Newly introduced crop fails to generate desired outcome (increased income, decreased malnutrition)	a. Conduct appropriate market and/or nutritional studies and select crops to be introduced based on results. Include social and cultural factors in crop selection.
		5. Depletion of water resources	a. Select crops that grow well under local water availability
		6. New crops benefit only certain population groups (large landholders, men)	a. Ensure equal participation of vulnerable population groups such as small landholders and women in project
	iii. Training on integrated pest management	7. Crop failure due to pests	a. Emphasize plant health through planting nursery-grown seedlings and adequately managing soil fertility and water
			b. Promote manual control of pests, including crop rotation with non-host species, coordination of planting calendars, hand picking of larvae, etc.
		8. Human health and environmental hazards, and risk of pest resistance posed by improper use of pesticides	a. Carry out a Pesticides Evaluation Report and Safer Use Action Plan (PERSUAP) if beneficiaries are already using pesticides and/or if the project will make recommendations on pest control techniques, including synthetic, organic and biological pesticides
	iv. Training on post-harvest processing	9. Post-harvest losses due to inadequate packing, storage, pests, and/or transportation	a. Promote better packing techniques to prevent losses during storage and transport
			b. Improve ventilation, humidity and temperature control of existing post-harvest storage facilities if possible. Incorporate these considerations in design of new facilities.
			c. Conduct a PERSUAP and follow applicable USAID and EPA guidelines in fumigation of storage warehouses if necessary.

		10. Generation of organic solid waste from post-harvest processing	a. Train farmers and families on techniques such as composting and worm culture and use of organic fertilizers to improve soil quality
		11. Generation of gray waters	a. Promote simplified gray water treatment and recycling system to use water in backyard gardens, etc.
	v. Trainings on soil quality management	12. Soil salinization or pH changes	a. Promote use of organic fertilizers such as compost and manure where available instead of chemical fertilizer
			b. Where chemical fertilizer is necessary, train farmers on best fertilization practices
	B. Improving livestock management	13. Soil compaction in grazing areas	a. Train livestock managers/farmers to prevent overgrazing and soil compaction
		14. Loss of wildlife habitat and biodiversity	a. Increase awareness among farmers of the long-term economic importance of maintaining balanced ecosystems, biodiversity and wildlife
	i. Training on improved grazing/pasture management techniques	15. Soil salinization and eutrophication due to overapplication of fertilizer	a. Promote use of organic fertilizers (manure, etc)
			b. Train farmers on soil quality management and appropriate use of inorganic fertilizers
		16. Inadequate water management may lead to depletion of water sources and reduce water availability for irrigation, livestock and or human consumption	a. Develop a community regulatory mechanism for water management to prevent exhaustive practices (consider upstream and downstream effects of management practices)
	ii. Training on livestock water management	17. Contamination of surface and groundwater sources from animal waste	a. Train community members on adequate livestock management practices such as keeping animals fenced at all times or at least during night hours, being the period of highest animal waste production

			b. Promote animal waste collection for its use/sale as organic fertilizer
	iii. Training of community animal health workers	18. Veterinary waste	a. Provide training to community health workers on proper disposal of veterinary waste such as sharps and expired medications and vaccines.

**III-C. Environmental Monitoring and Evaluation Tracking Table (Table 3).**

Environmental Monitoring and Evaluation Report (USAID/KATA) - AGRICULTURAL DEVELOPMENT									
Impact No.	Description of Mitigation Measure	Responsible Party	Monitoring Methods			Results			Recommended Adjustments
			Indicators	Methods	Frequency	Dates Monitored	Problems Encountered	Mitigation Effectiveness	
1	a. Promote low-till agriculture and minimize machinery use		% of beneficiaries adopting 3 or more best agricultural and environmental practices	Farmer survey	Semi-annually				
	b. Implement appropriate soil conservation technologies (see Irrigation and Soil Conservation EMPR)								

	c. Train beneficiaries on environmental and agricultural best practices								
2	a. Train users on machinery maintenance and ensure access to maintenance and repair parts/materials								
	b. Train users in proper used-oil disposal								
3	a. Conduct trials/establish demonstration plots under local conditions to ensure success before implementing on a wide scale		Y/N At least one introduced crop is sold in new market	Farmer survey	Once after first year of project				
4	a. Conduct appropriate market and/or nutritional studies and select crops to be introduced based on results. Include social and cultural factors in crop selection.								

5	a. Select crops that grow well under local water availability.								
6	a. Ensure equal participation of vulnerable population groups such as small landholders and women in project		% of women beneficiaries AND median land area of beneficiaries	Farmer survey	Annually				
7	a. Emphasize plant health through planting nursery-grown seedlings and adequately managing soil fertility and water		% of farmers adopting 2 or more pest control techniques recommended by the project	Farmer survey	Semi-annually				
	b. Promote manual control of pests, including crop rotation with non-host species, coordination of planting calendars, hand picking of larvae, etc.								

8	a. Carry out a Pesticides Evaluation Report and Safer Use Action Plan (PERSUAP) if beneficiaries are already using pesticides and/or if the project will make recommendations on pest control techniques, including synthetic, organic and biological pesticides								
9	a. Promote better packing techniques to prevent losses during storage and transport		% of post-harvest losses reported	Farmer survey	After each growing season				
	b. Improve ventilation, humidity and temperature control of existing post-harvest storage facilities if possible. Incorporate these considerations in design of new facilities.								

	c. Conduct a PERSUAP and follow applicable USAID and EPA guidelines in fumigation of storage warehouses if necessary.								
10	a. Train farmers and families on techniques such as composting and worm culture and use of organic fertilizers to improve soil quality		% of farmers adopting 1 or more composting/ fertilization techniques	Farmer survey	Annually				
11	a. Promote simplified gray water treatment and recycling system to use water in backyard gardens, etc.								
12	a. Promote use of organic fertilizers such as compost and manure where available instead of chemical fertilizer								
	b. Where chemical fertilizer is necessary, train farmers on best fertilization practices								

13	a. Train livestock managers/farmers to prevent overgrazing and soil compaction		% of livestock managers adopting 3 or more best practices recommended by the project	Livestock manager survey	Semi-annually				
14	a. Increase awareness among farmers of the long-term economic importance of maintaining balanced ecosystems, biodiversity and wildlife								
15	a. Promote use of organic fertilizers (manure, etc)								
	b. Train farmers on soil quality management and appropriate use of inorganic fertilizers								



16	a. Develop a community regulatory mechanism for water management to prevent exhaustive practices (consider upstream and downstream effects of management practices)								
17	a. Train community members on adequate livestock management practices such as keeping animals fenced at all times or at least during night hours, being the period of highest animal waste production								
	b. Promote animal waste collection for its use/sale as organic fertilizer								

18	a. Provide training to community health workers on proper disposal of veterinary waste such as sharps and expired medications and vaccines.		Y/N Sharps or veterinary waste observed littered around farms or community veterinary posts.	Site visit	Semi-annually					
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References for UEMPR tables:

Bickel Stephen E. (lead author with 6 others). "Environmental Guidelines for Development Activities in Latin America and the Caribbean." USAID Latin America Bureau Publication, July 2006.

Office of Sustainable Development, USAID Bureau for Africa. "Environmental Guidelines for Small-Scale Activities in Africa: Environmentally Sound Design for Planning and Implementing Development Activities. January 2007.