



**Farmer to Farmer  
Volunteer Assignment Scope of Work**

This assignment can be either Local or Virtual. Either way, the remote support of an American volunteer is needed.

Local Assignment: Ethiopian or East African volunteer to be paired with virtual supporting American volunteer.

Virtual Assignment: An American volunteer conducts a series of calls/meetings

Potential volunteers from Ethiopia or East Africa should email [haile.dolango@crs.org](mailto:haile.dolango@crs.org) and [lidia.retta@crs.org](mailto:lidia.retta@crs.org) to express interest.

American volunteers wishing to support virtually should email [maria.figueroa@crs.org](mailto:maria.figueroa@crs.org)

Summary Information	
Assignment Code	ET237
Country	Ethiopia
Country Project	Livestock
Host Organization	Almi Dairy Training Institute and Fresh Milk and Milk Products Processing
Assignment Title	Dairy Waste Treatment System Design
Assignment preferred dates	Flexible
Objectives of the assignment	Design appropriate waste recycling system for Almi fresh milk and milk product processing company
Desired volunteer skill/expertise	<ul style="list-style-type: none"> <li>Demonstrated knowledge and experience in designing dairy waste recycling system and dairy farm waste management</li> </ul>
Type of Volunteer Assistance	Technology Transfer (T)
Type of Value Chain Activity	Processing (P)
PERSUAP Classification	Type 2

**A. BACKGROUND**

Ethiopia is one of the Sub-Saharan Africa’s developing countries with a large potential in livestock, being 1st among African countries and 10th in the world. Livestock production accounts for 12-16% of national GDP, 30-35% of agricultural GDP, 15% of export earnings and 30% of agricultural employment. Livestock contribute to the livelihoods of 60-70% of the population.

According to the CSA (2010) report the cattle population was estimated at about 50.9 million. The indigenous breeds accounted for 99.19%, while the hybrids and pure exotic breeds were represented by

0.72 and 0.09 %, respectively. From the total cattle population, 45.13% are males and 54.87% females. The total estimated goat population was about 22 million with indigenous breeds accounting for 99.98% and hybrid and pure exotic breeds for about 0.02%. The male and female goat population accounted for 30.83 and 69.17%, respectively. The total camel population was estimated to be 807,581 with the proportion of male and female camels being 33.88 and 66.12 percent, respectively. In spite of such a substantial potential, the dairy sector is not developed to the expected level (CSA, 2010).

Almi dairy training institute and Fresh milk and milk products processing is privately owned, and fully automated dairy processing plant established in 2005 and has a daily output of 32,000 liter of various products. Their products include pasteurized milk, yoghurt, local cheese, provolone cheese, cream and butter. And they also provide dairy machine plantation and maintenance service. Almi dairy training institute is a branch of the company established in 2018 that provides training on dairy science technology, beef cattle production and management, poultry production and management, bee keeping, animal nutrition and dairy machine technology.

## **B. ISSUE DESCRIPTION**

All steps in the dairy value chain, including production, processing, packaging, transportation, storage, distribution, and marketing, impact the environment. Various product processing, handling, and packaging operations create wastes of different quality and quantity, which, if not treated, could lead to increased disposal and severe pollution problems. Wastes from the dairy processing industry contain high concentrations of organic material such as proteins, carbohydrates, and lipids, high concentrations of suspended solids, high biological oxygen demand (BOD) and chemical oxygen demand (COD), high nitrogen concentrations, high suspended oil and grease contents, and large variations in pH, which necessitates treatment to prevent or minimize environmental problems.

In this regard the host Almi dairy processing company lack the expertise as well as the facility to manage and recycle its wastes in a way that doesn't pollute the environment. The host disposes its liquid wastes by using waste disposal trucks two times in a month and that is costing them a lot of money and in addition their water consumption is very high which they almost use 3 liters of water to produce 1 liter of milk. The company plans to establish a waste recycling system to not only manage the effluent but also reuse the waste water.

The volunteer will design the waste recycling system and will train the staff with special emphasis on dairy waste recycling and management system.

## **C. OBJECTIVES OF THE ASSIGNMENT**

The objective of this particular volunteer assignment is to design waste recycling structure so that Almi dairy processing company can recycle and reuse the waste water.

During the assignment the F2F volunteer will perform the following activities:

- Identify the appropriate waste recycling system
- Identification of possible location(s) for the construction of the waste recycling system

- Design waste disposal facility based on implementation and sustainability, cost (capital and operating), environmental benefits, reliability.
- Produce drawings showing the layout of proposed facilities.
- Conduct detailed sizing calculations and produce preliminary plan and profile views of the processes.
- Produce a refined cost estimates (including capital and operation/maintenance)
- Recommend best processes for waste treatment.
- Train on dairy waste recycling/management system to 10 staff and 20 smallholder farmers who supply milk to Almi Dairy
- Prepare manual/guideline on dairy plant waste management system

In addition, to these suggested topics, the F2F volunteer specialist will be given an opportunity to initially assess the knowledge and skill gaps of the host for fruitful intervention. This will be done during the early stages of the assignment.

The target beneficiaries or audience of this training and technical assistance will be 10 staffs of the dairy plant and 20 smallholder farms.

#### **D. HOST CONTRIBUTION**

The Host, Almi dairy and processing will select staff, instructors and students to participate at the trainings. The host will also assign key personnel to work closely and facilitate the volunteer in his/her overall works including translation to the local language and to assist the volunteer during trainings. The host will arrange transportation and venue as required. CRS F2F Ethiopia will organize the volunteer's hotel arrangements (lodging) and ensure all required facilities are appropriate. CRS will cover lodging costs against receipts and provide per-diem advances for meals.

#### **E. ANTICIPATED RESULTS FROM THE ASSIGNMENT**

The volunteer's technical support will contribute to improved knowledge and skills of the host, in terms of plant dairy waste management and waste managements at smallholder level. The volunteer will contribute to the following

- Improved dairy waste management system
- 10 staffs will have improved knowledge and skills on dairy waste management and recycling.
- 20 farmers will have improved knowledge on dairy waste management
- Training materials on dairy waste management and recycling.

#### **F. DELIVERABLES**

- **Preliminary waste recycling system design**
- **Cost estimates for the structure**
- Prepare training materials
- Training lists with people trained
- Volunteer end of assignment report with recommendations to the host organization action plan and recommendations to CRS

- Conduct a final debriefing (PowerPoint presentation) with the host organization (plus key stakeholders) and CRS/USAID
- Conduct outreach events upon return to the US

#### G. SCHEDULE OF VOLUNTEER ACTIVITIES IN ETHIOPIA

Day	Activity
Day 1	Arrival in Addis at Bole Airport. The volunteer will be met by CRS's client hotel Eliana Hotel ( <a href="https://www.booking.com/hotel/et/eliana.">https://www.booking.com/hotel/et/eliana.</a> ; Phone: +25111 126 2600).The volunteer will locate the hotel kiosk and use pre-arranged shuttle
Day 2	<b>Rest Day (Sunday)</b>
Day 3	<ul style="list-style-type: none"> <li>• Take hotel shuttle to come to CRS office (CRS working days are Monday to Friday from 8:00AM to 5:00 PM East Africa Time)</li> <li>• Welcoming by CRS, and briefing meeting on security, general orientation, MEAL (attendance sheet, reporting and PPT templates), and logistic.</li> <li>• Discuss anticipated outcomes and work plan</li> <li>• Car travel to the assignment site (Awassa town, 270 km outside of Addis Ababa). S/he will be introduced to the host and accommodated in Awassa town.</li> <li>• General orientation with the host, first-hand briefing on the main objectives and modality of the assignment and adjustment of the agenda for the coming days (work planning session).</li> </ul>
Day 4	<ul style="list-style-type: none"> <li>• Conduct further assessment of skills and knowledge gaps with training participants</li> <li>• Based on information gathered and gaps identified, enrich the prepared training materials incorporating hands-on practices.</li> <li>• Develop 10 days (2 weeks training) curriculum covering key knowledge and skills Gaps</li> </ul>
Day 5-19	Train participants on appropriate subjects
Day 20	<ul style="list-style-type: none"> <li>• Briefing / exit meeting with the host in the presence of CRS staff</li> <li>• Volunteer travels back to Addis Ababa</li> </ul>
Day 21	<ul style="list-style-type: none"> <li>• Debriefing with CRS staff and/or USAID Mission</li> <li>• Finalize reimbursement expenditures and liquidations (if any) with finance.</li> <li>• Submit volunteer reports, training attendance sheet, assignment report, PPT presentation and any reference materials to CRS F2F team.</li> <li>• Depart for USA</li> </ul>
TBD	Outreach event when back in the USA

#### H. DESIRABLE VOLUNTEERS SKILLS

- Environmental Engineering or related field with extensive experience in designing waste disposal/recycling system
- Knowledge of dairy processing facilities is desirable
- Extensive practical experience in dairy waste management and recycling.
- Experience training adults, community development workers or community-based organization.
- Good analytical and intercommunication skills

#### I. ACCOMMODATION AND OTHER IN-COUNTRY LOGISTICS

- Before travelling to the assignment place, the volunteer will stay in Addis Ababa at one of the CRS's client hotels, Eliana <https://www.booking.com/hotel/et/eliana> or another hotel that will be booked and confirmed before the volunteer arrival date. The hotel will have rooms that include services such as airport pickup and drop-off, breakfast, wireless internet etc.
- The hotel or CRS will arrange a vehicle for short travel from the hotel to CRS and vice versa while in Addis Ababa.
- All required materials will be prepared ahead of time and provided to the volunteer. CRS Ethiopia will provide the volunteer with a laptop computer (if s/he needs), local internet dongle and mobile phone with a charged local SIM-card. Any other required logistics and facilities can also be requested by the volunteer during her/his stay in Addis Ababa.
- CRS will provide a vehicle and accompany the volunteer to the place of assignment.
- During the assignment period, the volunteer will stay at Lewi Hotel, Awassa town.
- CRS Ethiopia will arrange hotel accommodations and cover the lodging bills against receipts.
- CRS HQ will provide the volunteer with a per-diem advance to cater meals and incidentals.
- CRS Ethiopia will also reimburse the volunteer with laundry costs against receipts.
- For more information, please refer to country information that will be provided.

#### **J. RECOMMENDED ASSIGNMENT PREPARATIONS**

- CRS Farmer-To-Farmer livestock country project mainly focus on poultry and dairy sector. And specifically, this assignment will focus on cattle and sheep fattening.
- Although CRS F2F has developed such hinting SOW, the volunteer can fine-tune through her/his professional qualifications to successfully carry out this assignment. Prior to travel, the volunteer is advised to prepare necessary training and demonstration aids and written handouts. Softcopies of the handouts and any other paper materials can be printed for immediate use at the CRS office in Addis Ababa on request by the volunteer.
- If the volunteer requires simple training aids like flip charts, markers or tape s/he should make the request and collect from the CRS office in Addis Ababa prior to travel to the assignment place.
- Translation of handouts to the local language can be done in the locality of the assignment, if required.
- Depending on the meeting places and availability of electric power and LCD projector, the volunteer may use a laptop and projector for power point presentations.

#### **K. KEY CONTACTS**

To express interest in this assignment, please email the CRS Baltimore contact listed below. To find out additional information about the host, issue description or field conditions, please email the country contact provided below, copying the CRS Baltimore contact.

CRS Baltimore	CRS East Africa Regional Office
<p><b>Maria Figueroa</b>  Recruitment Manager  EA Farmer to Farmer Program  228 W. Lexington Street</p>	

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**CRS Ethiopia:**

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**Host Organization**

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