



# Report on solar pump experience-sharing and training in Lemo, Ethiopia

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Through action research and development partnerships, Africa RISING will create opportunities for smallholder farm households to move out of hunger and poverty through sustainably intensified farming systems that improve food, nutrition, and income security, particularly for women and children, and conserve or enhance the natural resource base.

The three regional projects are led by the International Institute of Tropical Agriculture (in West Africa and East and Southern Africa) and the International Livestock Research Institute (in the Ethiopian Highlands). The International Food Policy Research Institute leads the program's monitoring, evaluation and impact assessment. <http://africa-rising.net/>



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## **Background**

Africa RISING is a project working in Ethiopian Highlands aims to improve the house hold food security and farm incomes of farmers through sustainable intensification of crop-livestock systems. The project has four project sites in four regions of Ethiopia. South region (Lemo district, Jawe and Upper Gana), Oromia (Sinana district, Salka and Ilu-Sanbitu), Amhara (Basona Worena district, Goshe Bado and Gudo Beret) Tigray (Endamehoni district, Tsibet and Embahazti). Mainly, IWMI is executing off season irrigation activities with irrigation protocol in Africa RISING project sites.

## **Objectives of the trip**

- To follow up and coordinate installation of solar pump and the practical training on installation and maintenance to farmers and technicians.
- To take farmers for experience sharing on rope and washer utilization and vegetables and fodder production to the neighbor district to Angacha.

## **Experience sharing to Angacha**

Travel to Lemo from Addis was on August 28, 2015. The experience sharing was carried out on August 29/2015. Twenty nine farmers was participated from the two kebele (Jawe and Upper Gana). On August 28, 2015 Tesema went to Angacha to visit the place and to arrange the field program. During the field day, discussions were held with the district administrator and kebele administrators and farmers (27 men headed and 2 women headed) about the objective and importance of the trip. Three farmers farmland were visited for the experience sharing. All the visited farmers have rope and washer pumps and grow different forage and horticulture crops. The first and third farmer grows cabbage and carrot, the second elephant and desho grasses. They illustrated the technology (rope and washer) and vegetable and fodder production System.

Farmers from Angacha and Lemo discussed the following issues:

1. When did you start the technology? What was your perception at first for this technology?  
*1. Answer: He started to use the rope and washer two years ago. At first he had not confidence in using this technology. He was somehow reluctant. After getting the first production using the rope and washer, he liked the technology. He got good return/income by producing different crops from year to year.*
2. What is the depth of the well you use? Is it easy  
*Answer: The well is 12 meter deep. But, no problem observed to pump water. It is easy to rotate. Even pumped by women and children.*
3. Who maintains the pump if it is not working properly  
*Answer: Maintenance is done by the farmers and local technicians*
4. What are the crops you grow? What are the varieties of the crops? Which one is better?  
*Answer: Cabbage and carrot. The varieties what he uses is Euro and Holland for both. Euro is better when compared with Holland variety. The Euro variety can stay long at the ground before harvest.*
5. How is the market condition? Your income from this vegetable farm?  
*Answer: Most of the time the market is good. Traders collect from this farm. I got 8,000 Eth. Birr from this piece of land (200 m<sup>2</sup>) in one season.*
6. How did you get the elephant and desho grass and what benefit did you get?  
*Answer: He got from research center. He feed his cows and produce more milk.*



Figure 1: Farmers experience sharing in Angacha for vegetable and fodder



*Figure 2: Kebele administrator from Angacha forwarding his idea to the farmers*

At the end we discussed with the farmers and collected their feedback. As they said they got good experience from Angacha farmers. The experience initiated them to work in irrigation activities and get better income. But the pumps they have are different with the pumps in Angacha. In Angacha it is easy to operate for the pump greater than 12 m depth but it is difficult to operate and pump water from the well depth greater than 10 m with rope and washer in Jawa and Gana. Some rope and washer pumps also need maintenance.

### **Solar pump installation**

The solar pumps with accessories were distributed to the respective farmers at each kebele on August 30, 2015. After one day, on August 31, 2015 the trainer with his colleagues arrived to Hosaena/Lemo. The beneficiary farmers were selected two months ago. Before the installation started, the water level/depth of the well was measured to select the optimum fit position and fit the shaft. After the installation was completed, the discharge of the pumps was measured and recorded to know the capacity of the solar pump. Installation of solar pumps was started on September 1, 2015. On the first day two pumps and the second day one pump was installed in Gana. The third and fourth day practical training on the installation and maintenance/service of solar pump was given to the participants. The fourth pump was installed at the end of the training in order to help us for the practical training. The training was given by (Mr. Harry) from Practica/ the Netherlands. The practical training was organized for two days. The first day in the Hadiya zone agriculture office compound and second day at Jawa kebele farmer land.



Figure 3: Installation of solar pumps and fixing the solar panel



Figure 4: Installation of solar pumps and the solar panel





*Figure 5: Demonstration about the installation of solar pumps*



*Figure 6 : water pumping from the well using the solar pump and measuring the amount*

## Farmers name, well depth and pump capacity

Pump	Pump 1	Pump 2	Pump 3	Pump 4
installation date	01/09/15	01/09/15	02/09/15	04/09/15
Name Farmer	Abayneh Welamo	Ewunetu Tumito	Tefera Anito	Berhanu Tirkaso
depth well (surface to bottom) (m)	7.5	3.55	6.15	5.7
height of water in well (m)	1.5	1.55	1.35	2
water level below surface (m)	6	2	4.8	3.7
pump inlet above surface (m)	0.3	0.3	0.5	0.5
suction head (m)	6.3	2.3	5.3	4.2
delivery head (m)	2	1	0.5	0.5
Total head (m)	8.3	3.3	5.8	4.7
Stroke setting	4	3	4	4
No. of rubbers	6	3	6	5
Serial no. pump	110058	110042	110059	110045
Serial no. Motor	2150456		2150103	2150161
Serial no. Solar Panel		15010020		15010001
Yield (liter)	15	15	15	20
Time (sec)	48	47	74	91
Capacity (liter/min)	18.8	19.1	12.2	13.2
Capacity (liter/hour)	1,125	1,149	730	791



Figure 7: Service and maintenance of solar pump



Figure 8: the trainer elaborates the trainee on how to service the solar pump

## Participants in the training

Name	Kebele	Occupation
Bekele Begana	Upper Gana	Kebele leader
Abayneh Welamo	Upper Gana	Farmer
Tefera Anito	Upper Gana	Farmer
Misgana Ewunetu	Upper Gana	Farmer
Adnew Ayele	Jawe	Kebele leader
Berhanu Tirkaso	Jawe	Farmer
Belay Adela	Upper Gana	DA coordinator
Anduaalem Belabea	Jawe	DA coordinator
Misgana Hailu	Lemo Wereda	Irrigation expert
Gebreselassie Mulatu	ILRI/LIVES	Technician
Asrat Mitiku	Practica	Assistance
Tesema Tamrat	IWMI/lemo site	Field assistance
Mulubrehan Kifle	IWMI/Addis	Research Associate