

AFRICAN DEVELOPMENT  
INITIATIVE

# Project RISE



## Rural Irrigation System for Ekumdipe

### Description

Using dry-season farming techniques to maximize usage of land in Ekumdipe year-round.

### Implementation

Installing the irrigation systems and executing our pilot program.

### Next Steps

Assessing, critiquing, and overcoming obstacles to success.

## A letter from the Undergraduate President and Director of RISE

Dear ADI Members and Supporters,

First of all, I would like to **thank you** again for taking the time to read our second monthly update. Hopefully, you enjoyed the first one and we hope to continue to keep people like you **actively engaged** in our work through these updates in the future.

My name is Adam Demuyakor and I am the President of ADI's undergraduate arm. **Undergraduate involvement has always been near the core of our organization** and our Undergraduate Board works to support the larger non-profit institution by facilitating a structure in which bright and eager students can do what they can to help the African Development

Initiative continue to grow and execute our projects.

As I write to you from Harvard College, this is a special time for our organization. I say that for two reasons. First, this is a special time for us because **we have just completed the assembly of our Undergraduate board**. This board is vital for our undergraduate processes, as it will allow us to centralize student activity for the months and years to come. Secondly, this is an important time for ADI because of our impending Winter Africa trip. This December 5 members of ADI will travel to Africa to continue work on our two main



projects, ACWA and RISE. In our last update, we introduced you to project ACWA. This newsletter will feature Project Rural Irrigation System for Ekumdipe, or RISE.

As the project leader of RISE, I am ecstatic about the prospect of returning to Ghana to implement the next phases of the project. At this point, the system has been proven to work and **the potential is as high as ever** to positively impact the lives of the people of Ekumdipe. Thanks again for your continued support.

Adam Demuyakor  
ADI Undergraduate President



## Project Description

Using dry-season farming techniques to maximize usage of land in Ekumdipe year round.

Project Director,  
Adam Demuyakor

### The issue of poverty is at the forefront of development in Africa.

In our ADI Surveys, filled out by members of communities we have worked in, we ask, "What do people here need most?" The most common answer overwhelmingly is "Money. Can you give us jobs?" Historically, many organizations have tried to alleviate poverty in developing regions by giving donations directly to those in need. This type of solution is often ineffective, as it creates unnecessary dependencies, and is rarely self-sustainable. In some cases, donations made with the best of intentions can ruin the little economic activity in an area by undermining markets and discouraging internal entrepreneurship.

Project RISE employs a different strategy. The ADI Project Rural Irrigation System for Ekumdipe (RISE) shows local people **how to alter farming practices to increase their income**. Ekumdipe is a community of about 1,200 people in one of Ghana's rural, northern regions that experiences extreme idleness during the dry-season (which is approximately from October to March). Farmers earn nothing during this 6-month period, which keeps the people of Ekumdipe in poverty.

Farmers in the area produce the vast majority of their crops during the rainy season. The outskirts of Ekumdipe are only about 1 to 1.5 kilometers away from the Daka River, which

flows throughout the year into the Volta River/Lake. Seasonal floods sometimes bring water to within 30 meters of the community. As the water recedes after the rainy season, fertile soils remain for vegetable cultivation.

However, during dry season, rain in the area decreases drastically. Lands become so dry that farming is futile. The farmers in Ekumdipe do not work during this season and **forego a substantial amount of potential income**.

In partnership with Dr. Bawa Demuyakor at the University of Development Studies in Ghana, Project RISE aims to use dry-season farming techniques practiced in nearby regions with similar climates to begin maximizing the uses of land in Ekumdipe year-round. **Our goal is to utilize the nearby Daka River to create a thorough water irrigation system.**

Farmers in the area grow typical tropical sub-Saharan African crops such as corn (maize), millet, sorghum and rice, all staple cereal crops. These are currently grown only seasonally but, with proper irrigation, can be cultivated throughout the year. Farmers seasonally grow typical vegetables as well, such as tomatoes, okra, assorted bean types, peppers, cabbages, carrots, and many others local varieties. These vegetables could also be grown all year with adequate water supply.

After several meetings with the farmers in Ekumdipe and surrounding communities, we learned that farmers produce a sufficient supply of the staple cereal crops (corn, millet, sorghum, and rice) to store until the next year's crop arrives. However, the same is not true of the aforementioned vegetables and peppers, which are in short supply during the dry-season. As a result, these vegetables sell in the markets of the nearby urban center of Tamale for high-prices compared to the prices in regions familiar with the techniques of dry-season farming, such as southern Burkina Faso. **We hypothesized that with its proximity to Tamale and technical assistance from us, Ekumdipe could enter this market, increasing the food supply and stimulating small-scale trade growth.**







## Project RISE Implementation

Installing the irrigation systems and executing our pilot program.

To test our hypothesis, we began our pilot irrigation program in Ekumdiye. After exploring various options, we decided to use Honda WB30XT Pumps (\$500) and locally available aboveground rubber piping to create the irrigation systems. The Honda WB30XT Pumps also power motorbikes that serve as the primary means for transportation in the village. Hence, **most people in the community are already quite familiar with its maintenance requirements** and have some quite ingenious methods (or “Ghanaian ways”, as the locals will tell you) for keeping these pumps running for years.

The system works as follows. First, place the pump in an area between a body of water and the desired farm-area. Then, insert an input pipe (green) and an output pipe (blue) into the pump. The distal end of the input pipe is placed into the nearby water source (either the Daka River or the reservoir near the community) and the output pipe is laid onto the pre-tilled farmland. Once all of the parts are in position, an individual starts the system by pulling on the black pull chord that is attached the pump. The pump will pull water from the water source and shoot it out towards the farm. The farmer moves the output pipe in order to irrigate the land evenly. Each pump is sufficient to irrigate 2 to 3 acres of land, the amount of land typically owned by 1 to 3 families in Ekumdiye.

For our initial trial, we decided to purchase 4 complete pump systems and lend them to a team of 10 farmers, whom members of the community deemed capable and creditworthy. We considered that selecting the best farmers would skew our findings, which might not represent the entire community. However, we decided that convincing the skeptical community that they could indeed grow crops in the dry-season was a critical first step, and capable farmers would be most likely to ensure the success of the pilot.

Through grassroots fund raising, we accumulated sufficient funds to purchase the supplies. Also, our team was fortunate enough to collaborate with **Harvard Economics professor Dr. Richard**

**Freeman**, who extended a grant to Project RISE in exchange for on-the-ground research in Ekumdiye. This solved our three major problems with the trial at the same time: funding, the need for external assessment of the project, and the requirement for increasing our own accountability by adding the scrutiny of a professional. At the time, Professor Freeman was beginning intensive research on the importance of water in developing regions of the world. Our irrigation project fit perfectly into the nature of his research, and he was willing to provide funds in exchange for data and updates on the impact of water in this particular community. With the funds raised, Dr. Bawa Demuyakor and the ADI RISE team purchased the pumps, pipes, fertilizer, and seeds for dry season farming.

Once in our team reached Ghana, Dr. Bawa Demuyakor provided technical assistance and loaned the 10-farmer team its supplies. He explained that they would need to repay at minimum 10% of the costs after the first dry-season farming cycle, using the profits from the additional crops. Based on the outcome of the pilot, these repayment rates would be adjusted, for future loans, and appropriate interest rates would be set. All repaid loans would be used to fund the purchase of more pumps, and eventually to fund other local micro-enterprises.

After the town meeting, we conducted baseline household surveys for our research with Dr. Freeman. We modified a Zambia tested pro-social orientation questionnaire, designed with the intent of understanding participants’ standards, opinions, and expectations prior to the initiation a project, and made it appropriate for a Northern Ghana community. Our questions focused on determining the farmers’ attitude on working on the behalf of others even if their families are not the sole beneficiaries of the project; their willingness to pay back the supplies so that other community members could prosper; how their work ethic compared with that of the whole community. **Lastly, we asked the farmers if they felt the project was a worthy cause. All ten answered “yes”.**



## Next Steps

Assessing, critiquing, and overcoming obstacles to success.

There are many challenges to working with such a rural, remote community. Last dry season, we encountered one such obstacle. We asked people for their income levels to obtain a baseline against which to measure the effects of our farming innovation. We learned that in the community, people are loath to disclose personal financial information. Consequently, **we are developing a new method based on harvest yields and prevailing market prices to estimate increases in income.** We will supplement this report with qualitative survey data in order to measure the success of the pilot.

This December, the ADI RISE team will travel to Ekumdi to conduct our **first major assessment and critique of the trial phase of the project.** To closely monitor the project in our absence, we selected a respected male schoolteacher in Ekumdi to act as liaison. We will provide this him/her with a laptop so he/she can provide weekly updates on that status of the system.

Last season, the first year of our project, the farmers successfully grew crops in the dry season for the first time, something they had never done before. However, our crop yield was lower than expected. Dr. Bawa and the RISE team in Ghana attributed this to a deficiency in motivation and/or knowledge about dry-season farming. To increase motivation, before the next dry season, we will recruit an outside farmer from the Bawku region to set up a farm. This individual will set up a new farm in the region and farm amongst 3-4 farmers of the pilot group. Our hypothesis is that the exposure to a successful farm and access to knowledgeable expert will cause the other members of the system to quickly catch on and experience high yields as well. Other organizations that introduced new technological innovations in underdeveloped regions have employed an outsider to demonstrate the success of the project. We expect that a new farmer who has experienced drastic success will motivate local farmers to work hard for their own harvests.

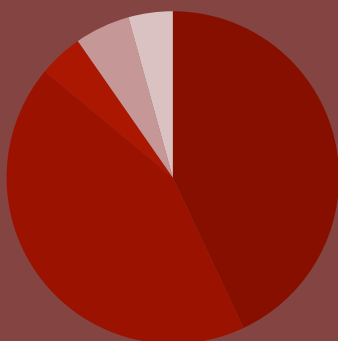




## Our Progress:

- ✓ Selected 10 farmers based on precedent trends of success in rainy season farming
- ✓ Purchase 4 Honda WB30XT pumps
- ✓ Purchase approximately 400 meters of rubber pipe works to attach to the system
- ✓ Transport supplies from the capital of Accra to the northern community of Ekumdipe
- ✓ Begin pilot irrigation system utilizing the transported pipe system and the 10 initial farmers
- ✓ Identify on the ground communication liaison to ensure more accurate real-time updates
- ❑ Provide liaison with proper communication means (laptop computer, wireless router, etc)
- ❑ Hire outside farmer from Bawku region to better demonstrate successful dry-season irrigation methods
- ❑ Revamp system to measure outcomes (new system will rely on prevailing market prices instead rather than via farmer recollection)
- ❑ Acquire extra pipe connections to spread area of watering and further enhance the existing irrigation system
- ❑ New farm inputs for next season:
  - vegetable seeds
  - weedicides
  - insecticides

### Project Budget: \$6,450



- 4 Motorized Water Pumps (\$500/piece)
- 10 Pipe Works (\$200/piece)
- Transportation of the Pipes and Pumps from City
- Tillage of 10 Acres of Land (\$25/acre)
- Fencing Materials and Fencing of 10 Acres of Land (\$200/acre)





Dear Readers,

As you saw in the previous page, it will take roughly \$6,500 to successfully carry out the next phase of Project RISE. If you are interested in helping us fund these components, please visit our website, [www.africandi.com](http://www.africandi.com), and select "Donate" or just click the following link: <http://www.africandi.com/?p=donate>

None of our projects would be possible without your endless support. Thank you.

Sincerely,  
The ADI Board

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