The Challenge

Millions of people living in the drought prone Horn of Africa face persistent threat from a lack of safe, reliable and affordable water year-round. The hot and arid regions of Somalia, Kenya and Ethiopia are experiencing increasing frequency and severity of drought conditions. Drought emergencies occur when reduced rainfall, exacerbated in recent years by climate change, combined with limited community capacity and institutional failures cause dramatic reductions in access to water for people, livestock and agriculture. These people are among the most marginalized communities in East Africa. This crisis results in catastrophic crop failures, public health stress, economic shocks and displacement of people.

The destabilizing impact of drought emergencies increases with each successive event, leading to vulnerability and insecurity in this complex region.

Theory of Change

Using localized drought forecasts and groundwater sustainability estimates to identify and prioritize strategically selected groundwater borehole systems, DRIP can ensure water delivery during dry and drought seasons. We will operationalize DRIP’s borehole water services through pay-for-performance contracting, ensuring that all institutions and partners are incentivized to provide water asset management and year round safe water supplies.

Work Flow

1. **Drought Forecasting**
   - Water & Food Security Monitoring
   - Drought Forecasting
   - Pay-for-Performance Contracting
   - Water Supply Operation & Maintenance

   **IN-SITU DATA**
   - Rainfall
   - Remote Sensing
   - Water Security

   **REMOTE SENSING DATA**
   - Groundwater
   - Surface Water
   - Land Use
   - Vegetation

   **DATA PRODUCTS**
   - Groundwater
   - Surface Water
   - Land Use
   - Vegetation

   **APPLICATIONS**
   - Water Security
   - Food Security

   **IMPACTS**
   - Increased Water Security
   - Increased Food Security

   **Modelling Supported**
   - Groundwater Borehole Planning
   - Groundwater Demand Forecasting
   - Pre-positioning of Water Trucking

Our Solution - DRIP

Drought driven humanitarian emergencies can be prevented if groundwater is reliably made available at strategic locations during cycles of water stress. DRIP - The Drought Resilience Impact Platform's comprehensive systems design integrates early detection and planning with proactive groundwater management to ensure water availability, thus enabling drought-prone communities to become effective managers in the prevention of these humanitarian crises. It replaces reactive and expensive short-term solutions with one that avoids humanitarian crises. This crisis results in catastrophic crop failures, public health stress, economic shocks and displacement of people.

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Our Approach

In partnership with the SERVIR - Eastern and Southern Africa Hub, hosted by the Regional Centre for Mapping of Resources for Development (RCMRD) -

We are linking in-situ data collection tools managed by our team and deployed in East Africa with remote sensing data sets to develop machine learning supported interpolated data products for localized rainfall, localized temperature, localized groundwater use, forecast groundwater demand, and localized land properties.

Through data integration for drought forecasting, surface and ground water availability, and agricultural yield estimation, we will use these metrics to generate a new SERVIR ESA data service: Groundwater Use & Demand Forecast Service. We will disseminate our products to the Kenya National Drought Management Authority, the Ethiopian Ministry of Water, Irrigation and Energy, the Intergovernmental Authority on Development Climate Prediction and Applications center and regional government partners. DRIP targets many of the most vulnerable populations within sub-Saharan Africa - agriculturists and pastoralists living on subsistence farming and livestock, who are prone to migration due to water and resource insecurity. In the pastoral communities, it is estimated that these are 19.6 million pastoral people in the Horn of Africa, of whom 40 percent survive on less than one dollar a day, USAID estimates that each for $1 invested in resilience in areas of recurrent crisis, nearly $3 will be saved in averting crises and humanitarian interventions. DRIP seeks to empower these communities to increase their drought resilience and water security, helping to preserve their way of life.

Our Consortium


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Partners

The Mortenson Center in Global Engineering

NASA

USAID

RCMRD

Famine Early Warning Systems Network (FEWS Net)

Millennium Water Alliance