

## FROM RAINDROPS INTO SAFE CLEAN WATER

**How we are turning Nature's drops into safe, clean water for schoolchildren in Western Uganda.**

Ryan's Well Foundation uses rainwater harvesting tank (RWHT) technology that collects, stores, and filters rainwater for immediate or later use. It's a simple yet powerful way to make use of natural rainfall, especially in areas where water is scarce or unreliable. Our local partner (RWIDF) employs this technology in Western Uganda to deliver sustainable WASH services to schools and communities in mountainous landscapes. This year alone, 8 rainwater harvesting tanks each measuring 30,000L are being built for 8 schools within Uganda's Western region districts of Rukungiri, Ntungamo and Mitooma.

### Why Rainwater Harvesting Tank?

#### Environmental Suitability

- **Seasonal Rainfall Patterns:** Like other many tropical African countries, western Uganda experiences intense but short rainy seasons followed by long dry spells. Rainwater harvesting captures water during rains for use during droughts.
- **Groundwater Depletion:** Over-reliance on boreholes has led to reduced groundwater levels. Harvesting rainwater helps reduce pressure on these sources.
- **Flood Mitigation:** Tanks help manage stormwater runoff, reducing erosion and flooding in vulnerable areas.

#### Water Access and Quality

- **Clean Water Source:** Rainwater from rooftops is relatively clean and is made potable with simple filtration, reducing reliance on contaminated surface water.
- **Improved Hygiene and Health:** Access to stored rainwater reduces has proven to reduce the spread of waterborne diseases and improves sanitation, especially in schools.

#### Social Impact

- **Empowered Communities:** We use local construction materials like cement, sand, and metal sheets, making the technology accessible and maintainable by communities themselves. Also, the labor is sourced locally after meticulous training.
- **Gender Equity:** Reduces the burden on women and girls who traditionally spend hours collecting water; freeing time for education and economic activities.

## Economic Viability

- **Low-Cost and Scalable:** Systems can be built with locally available materials and adapted to household, school, or community scale.
- **No Electricity Needed:** Gravity fed systems work without pumps; making them ideal for off-grid rural areas.

*Rainwater harvesting tanks are more than just a water solution; they're a catalyst for resilience, equity, and sustainability among the benefiting communities.*

## Step-by-Step Process: Above-Ground Concrete Rainwater Harvesting Tank

### 1. Planning and Design

- Determine capacity based on rainfall, roof area, and water usage.
- Choose location: elevated, near downpipes, with stable ground and easy access.
- Design features: inlet, outlet, overflow, inspection hatch, and filtration system.

### 2. Site Preparation

- Clear the area of vegetation, debris, and loose soil.
- Excavate and level the ground to create a flat base.
- Compact the soil to prevent settling and ensure stability.

### 3. Constructing the Base Slab

- Build formwork for the base using timber or metal sheets.
- Lay reinforcement mesh (steel bars) to strengthen the slab.
- Pour concrete and vibrate to eliminate air pockets.
- Cure the slab for at least 7 days to gain strength.

### 4. Building the Tank Walls

- Erect wall framework: circular or rectangular, depending on design.
- Install vertical and horizontal reinforcement bars inside the formwork.
- Pour concrete in layers, vibrating each layer thoroughly.
- Include embedded pipes for inlet, outlet, and overflow during pouring.
- Let the walls cure for 7–14 days, keeping them moist.

## 5. Constructing the Roof or Cover

- Design a removable or fixed cover to prevent contamination.
- Use reinforced concrete or metal sheets, depending on budget and access needs.
- Install an inspection hatch for cleaning and maintenance.

## 6. Waterproofing

- Apply waterproofing compound or slurry inside the tank.
- Seal joints and pipe penetrations with hydraulic cement or epoxy.
- Test for leaks by filling the tank partially and observing for 48 hours.

## 7. Plumbing and Filtration

- Connect inlet pipe from roof gutters with a first-flush diverter.
- Install outlet pipe with tap or valve for water access.
- Add overflow pipe to direct excess water safely away.
- Include a mesh or filter at the inlet to block debris.

## 8. Final Checks and Commissioning

- Inspect structural integrity, plumbing, and waterproofing.
- Clean the tank before first use.
- Monitor water quality regularly, especially if used for drinking.

