ROTARY FUNDED SAND DAM

DOCA, MOZAMBIQUE

Excellent | Pioneers of Sand Dams

INTRODUCTION

Excellent Development supports dryland communities to build sand dams, providing a reliable and convenient access to clean water. With the time saved from collecting water, people can invest in their livelihoods, such as farming and livestock.

To date we have worked with over 200 communities across 9 different countries, resulting in over 1,000 sand dams being built and over 1 million now have an improved source of water close to their homes.

We are proud and immensely grateful to have been working closely with Rotary since 2002, helping communities living in rural drylands to transform their lives through local, reliable and cost-effective water supplies.

This report details the successful completion of the Doca sand dam in Mozambique, generously supported by the **Rotary Clubs of Brighton and Hove Soiree, Chichester Priory, Kew Gardens and Walton on Thames**.

Above top: A map demonstrating the countries we have worked in
Above bottom: Aerial view of a mature sand dam in southeast Kenya

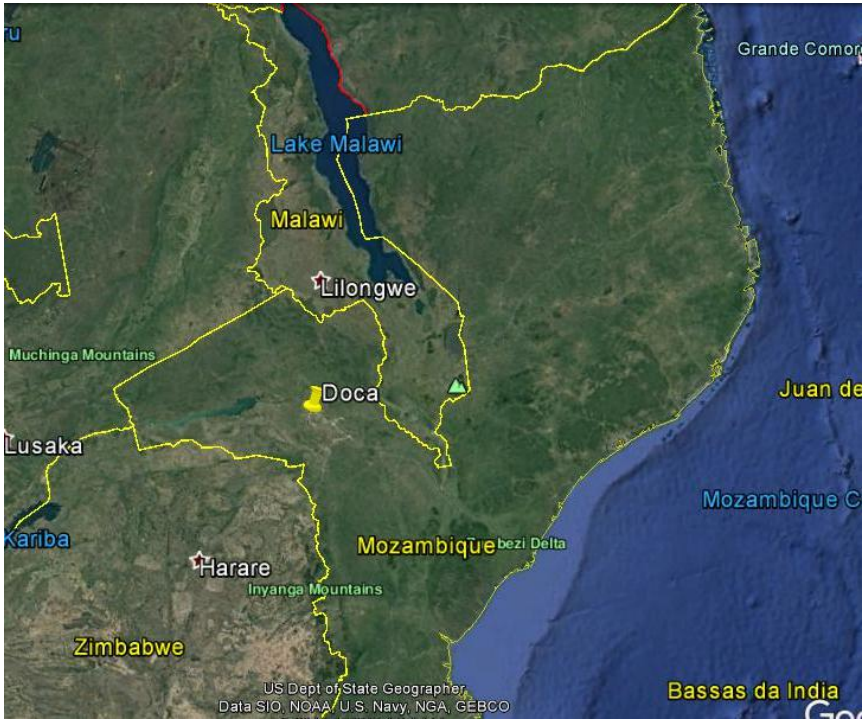
CAUGHT IN A DRYLAND TRAP

Mozambique is one of the poorest and most disaster-prone countries in the world. The country is vulnerable to extreme climatic conditions such as droughts, cyclones and floods, which destroy infrastructure and restrict economic growth.

Extreme poverty has become prevalent in Mozambique's rural drylands. More than 70% of poor households live in rural areas with rain-fed agriculture as their main source of food and income. Agricultural productivity is low and most of the rural population survives at subsistence level.

The World Food Programme estimates that over half of Mozambique's households are affected by food insecurity and approximately one-third by chronic food insecurity. In addition, only around 60% of rural people have access to safe water.

Doca has a total population of 3,200 people. Doca is located in Tete province, where women and children, and often girls, are the main water carriers, and also make up the largest proportion of the community engaged in agricultural activities. The water shortage situation forces them to walk long distances to fetch water: our consultations showed that women can queue for up to two days at a time to collect water.



POVERTY IN RURAL MOZAMBIQUE

The causal factors leading to poverty in Mozambique's rural drylands are complex and interlinked:

1. Droughts and floods result in chronic soil erosion and poor soil fertility. This is compounded by harmful environmental practices such as logging, charcoal burning and slash and burn farming

2. Intermittent rainfall, frequent drought and lack of infrastructure to harvest rainwater result in widespread severe water shortage, forcing people to walk long distances to fetch water, the burden for which usually falls to women and children

3. People lack the knowledge and resources to adopt techniques that would enable them to adapt to their increasingly dry environment, and Government extension services lack the funding and capacity to reach the most vulnerable communities

Female members of the Doca community collecting water

CONSTRUCTION PROCESS

A team of community members provided the labour (including the collection of rocks, sand, and water) as part of their contribution to the project. Often a vehicle is also hired for a few days to help with water collection, as water sources are so far away, and dam construction requires a lot of water for mixing cement.

Once enough rocks, sand and water were collected, and the fundis (skilled builders) had prepared the dam site ready for construction, the materials such as cement and timber were ordered, the technical sand dam team arrived on site, and dam construction commenced.

Once construction was completed, the timber shuttering was removed. Barbed wire used to reinforce the structure was trimmed and any holes or exposed rocks were plastered with mortar. Finally, in order for the dam to reach its maximum strength and to prevent shrinking and cracking, the dam was watered to 'cure the cement' for 4 weeks after construction. Keeping the dam hydrated in this way lets the cement and sand particles bond together.

Doca sand dam under construction

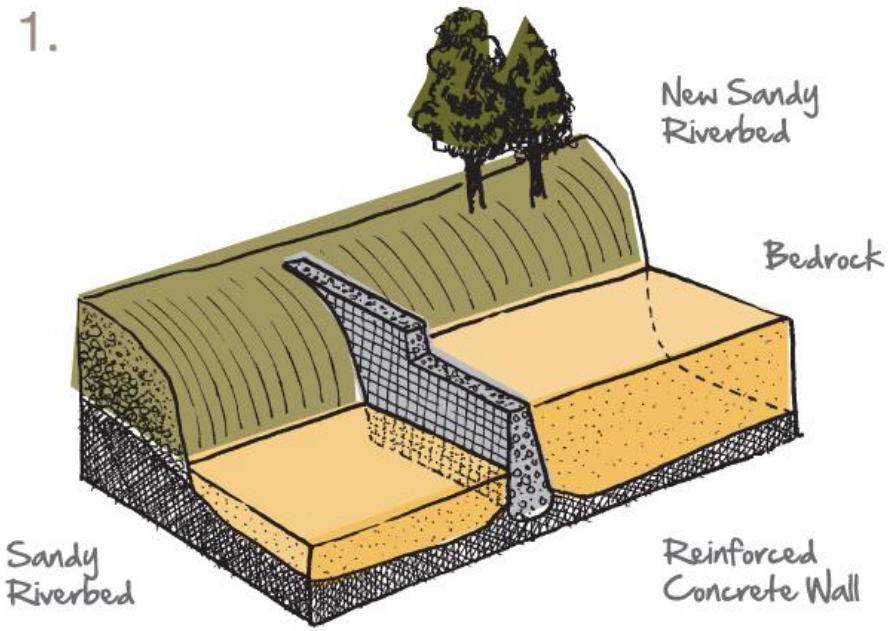
HOW SAND DAMS WILL WORK

What is a sand dam?
A sand dam is a reinforced concrete wall built across a seasonal sandy river. They are a simple, low cost and low maintenance technology that serves to retain rainwater and recharge groundwater.

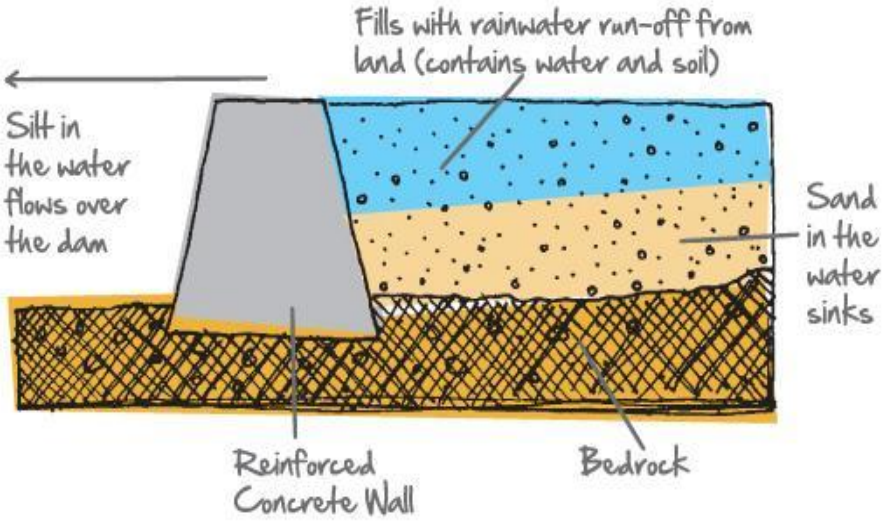
They can store up to 40 million litres of water and are widely suited to dryland regions of the world.

How do sand dams work?
Seasonal rainfall fills the dam with water containing eroded soil. The soil is made up of silt and sand. The heavier sand sinks behind the dam, whilst the lighter silt washes downstream.

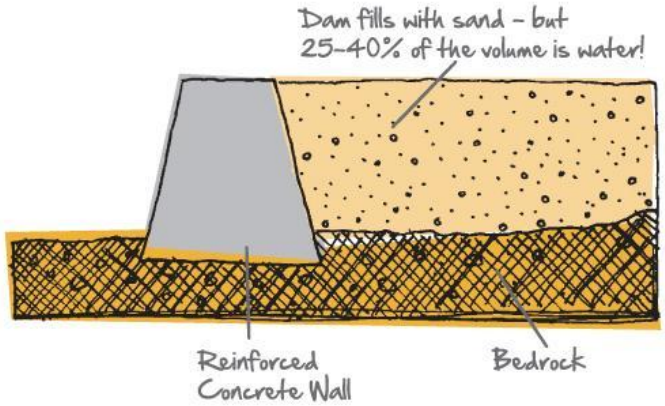
1.



2. 1-3% of water flowing downstream is retained behind the wall



HOW SAND DAMS WILL WORK



Sand accumulates behind the dam until it is full to the spillway. 25-40% of this volume is actually water, trapped in the spaces between grains of sand.

Because the water is stored within the sand, it is protected from evaporation losses.

Getting Water from Sand Dams

1. People use traditional scoop holes to collect water from any point along the dam.
2. Infiltration galleries leading to pipes or taps enable water to be abstracted through the dam wall.
3. Infiltration galleries can also be linked to sealed shallow wells with hand pumps.

HOW FUNDS WERE SPENT

Doca Sand Dam, Mozambique

ACTIVITY/IES		TOTAL
Project Mgt & Fieldwork	**£**	**2,033**
Finance & Admin Costs	**£**	**154**
Transport	**£**	**1,115**
Sand Dams	**£**	**6,632**
Cement	£	3,645
Steel and barbed wire	£	1,848
Timber Shuttering	£	355
Tools	£	264
Material Transport	£	521
Fundraising & Communications	**£**	**1,502**
Governance	**£**	**601**
TOTAL BUDGET	**£**	**12,037**
Funding from Jersey	**£**	**5,091**
ED to underwrite	**£**	**1,246**
Rotary cofunding	**£**	**5,700**

Acknowledgements

Excellent Development is grateful to the Rotary Clubs of Brighton and Hove Soiree, Chichester Priory, Kew Gardens and Walton on Thames who have contributed towards this work.

We are also indebted to many individual Rotarians who have dedicated their time and support to helping promote Excellent's particular approach to sustainable development.

THANK YOU FOR YOUR SUPPORT

Above: Doca sand dam plaque

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