

## Soil & Water Conservation

Lack of water is the biggest threat to the lives of people living in semi-arid Africa. In addition, soil erosion further restricts their ability to grow enough food to eat. Even though semi-arid Africa gets 500-1200mm of rain a year – this usually falls over a total period of only 2 weeks. This means that water and soil rush off dry sloped land and gush down dry riverbeds, eventually ending up in the ocean.

In eroded lands rainwater run off is between 20% and 70%. Plus, land can lose 50 -250 tonnes of topsoil a hectare every year, if not protected by trees and terracing. Excellent Development works to help communities in semi-arid Africa to improve water and soil conservation in three key ways:

- Terracing land
- Building Sand Dams
- Planting Trees

The terracing of land by farmers can reduce average water run-off from 45% to 5%. Soil losses can be reduced even more dramatically – by up to 97%. You can find out more about terracing in the short film.

**Simon, Excellent Development co-founder –** *'The water falls in a very short space of time. What happens is that not only does the water run away from the farm, but it takes the most fertile soil from the farm as well. So the first step has got to be not to capture water in the valleys but to capture water first of all in the farms. That's the way in which they're going to be able to grow more food.'*

Having increased the amount of soil and water retained in the farms, sand dams provide an innovative solution to conserving more water in the dry river beds. Built as reinforced concrete walls, they initially fill up with water – but after 1-3 seasons, fill with sand. With about 40% of the volume behind a dam being water – sand dams can hold an incredible 2-10 million litres of water. They therefore provide a year round water supply for up to 1200 people. You can find out more about sand dams in the short film.

**Harold Miller, Excellent Supporter –** *'Sand dam is really a part of renewing of the local water resource. It is not only saving water, it is actually recharging the surrounding area. So in theory, and this has not been demonstrated through research, a series of dams in a river over time, once they're mature, will have so much water in the whole region that basically you have solved your water problem.'*

The permanent increase in the water table caused by sand dams has long term effects too – creating a micro-climate where trees grow naturally and bird-life returns.

Sand dams also enable the next key step in Excellent Development's work in soil and water conservation. Increased water capacity allows communities to set up tree nurseries in semi-arid areas where tree planting is otherwise near impossible. Growing seedlings during the drought periods ensures trees can be planted when the rains come – massively increasing their survival rate. Lack of trees is one of the gravest threats to ecological stability and food production in Africa. When trees are planted in farms, they prevent soil erosion, increase the moisture in the soil and, in many cases, increase fertility too. Their ability to provide fuel, food, fodder, compost, building materials and even medicines, really helps farmers to achieve food security. For more on how trees help to transform semi-arid environments see the short film.

**Prof. Mugambi, University of Nairobi –** *'The Micro-climate here has changed a great deal and it has changed because of the following reasons. First of all trees have been planted and normally this area would have Acacia and grass. But the community here over the last 25 years have planted lots of trees. What this has meant is that there is more precipitation because of arresting the clouds. There is much more dew now, here, and also, the birds and the insects and the wind, are bringing more seed here. So what is happening here is that over the last 25 years this climatic zone has shifted from fairly semi-arid zone 5, geographically, to zone 3. Rainwater harvesting and planting trees, if it were to be spread across the board, would achieve a great deal in contributing to the reversal of global warming'*

The benefits of soil and water conservation can clearly be seen in these pictures of Manza valley, Iiyuni, Machakos. This picture shows what it looked like in 1984. Then, after several dams were built in the valley in 1985, this impact was obvious in August 2002. These dams are being extended in 2006.

**Simon, Excellent Development co-founder –** *'Conventional thinking on development is that development needs to be inhibited in order to protect the environment whereas in semi-arid Africa the situation is really completely different. It's actually through conserving soil and water and conserving endangered species of trees that people can actually develop.'*