



# Watersheds and the important role they play in improving food security and livelihoods in Malawi

## A challenging context

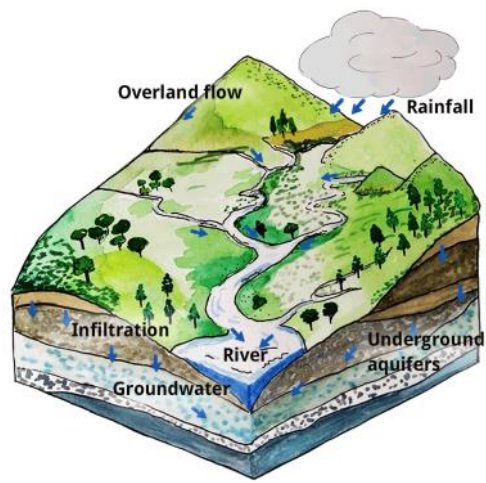
It is estimated that two-thirds of people in Africa live on land that is degraded to some extent. Malawi, a shock-prone country commonly affected by droughts and floods, is no exception. As a result, every new drought or flood further depletes people's assets, erodes their resilience and traps them in a spiral of food insecurity and poverty.

In addition to contributing to more frequent and natural disasters, climate change also makes land and water more difficult to access and agricultural productivity harder to achieve.

## What is a watershed and why is it important?

A watershed is an area of land that drains or "sheds" water into a specific waterbody. Watersheds drain rainfall into streams and rivers; and gravity helps guide the path that water takes across the landscape.

Additionally, given a watershed covers a large area, the actions of one individual or group living in one part can directly and indirectly affect those living in another part of the watershed.



For instance, deforested hill slopes for agricultural production increases likelihood of floods and landslides in the valleys.

Degraded watersheds, as a result of deforestation and other occurrences, can negatively impact livelihoods, leaving households more exposed to shocks. An unhealthy watershed can lead to rapid acceleration of soil erosion, depletion of water tables and low soil contents of moisture and nutrients, translating into frequent crop failures.

## Watershed and food insecurity

Food insecurity is highest in the most fragile and degraded environments. Watershed management enhances the natural productive capacity of the environment upon which farmers depend.

To have a significant impact, watershed management needs to be conducted at a larger more community or inter-community scale and not just in individual farming plots. This collective approach is critical in order to build, rehabilitate and maintain the necessary water and soil conservation structures.



Farmers digging individual trenches to retain moisture in the fields before the planting season. Photo WFP/Badre Bahaji



## WFP's role in watershed management

WFP contributes to watershed management through its Food Assistance for Assets (FFA) programmes, where people receive cash or food based transfers to address their immediate food needs, allowing them more available time to build or boost assets, such as rehabilitating degraded land; digging trenches; or working on gully reclamation, check dams, tree regeneration and similar structures at community and household levels.

This kind of action improves participants' livelihoods by creating healthier natural environments and also reducing the risks and potential impact of climate shocks. On-farm biodiversity through crop diversification and agroforestry, often using local crop varieties, as well as organic fertilisers (composting) is also encouraged. Overall, these interventions (involving soil conservation and fertility measures, water harvesting and flood control) bolster agro-ecological productivity and reduce the loss of biodiversity.

## Restoring and rehabilitating ecosystems

The restoration of degraded ecosystems helps the most vulnerable and food insecure communities manage natural resources sustainably, which also better equips them to meet their needs and safeguard these resources for future generations. The approach contributes to changing the downward spiral of degrading landscapes to a virtuous cycle of increasing productivity and income opportunities.

## A participatory approach

Watershed rehabilitation and management is something that involves the community as a whole, not just individuals. WFP places communities at the centre of activities through the implementation of Community-Based Participatory Planning (CBPP) sessions where farming communities identify their own challenges and ways to address them.

## Linkages

Increasing food security and building sustainable livelihoods is something that WFP addresses from multiple angles. Providing households with a package of asset creation linked to integrated risk management and climate services targeting the same beneficiaries is critical to making them more resilient and food secure. Watershed management is therefore implemented in conjunction with a number of disaster risk reduction interventions.

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*Most of our crops were washed away by running water from the mountain which were flooding to our land and home. We had to be renovating the house every year. I took part in the restoration of the watershed with creation of assets like planting trees and digging deep trenches to trap water. These assets started reducing the rainwater runoff and protected our farm. Our average maize yield has doubled in just a few years.”*

**-Mary Simon, mother of five, GVH Mtuwa, Mangochi district.**





### Asset Impact Monitoring (AIMS)

Asset Impact Monitoring (AIMS) allows WFP to clearly see the rehabilitation of watersheds and other assets created through Food Assistance for Assets (FFA) activities through the use of satellite imagery and drone footage.

This visual monitoring tool helps track improvements and contributes to sustainability as it provides clear pictures both of rehabilitated assets as well as of areas that may need additional support.

Below is an example of AIMS monitoring of assets at the Mtumbwe watershed management in Kachenga, Balaka over a period of five years. As can be seen, the "AFTER" picture notes significant reforestation, particularly on the lower left and right sides of the images.



### Restoring degraded land: A return on investment

Rehabilitating watersheds contributes to restoring degraded land that can then be more effectively used, both for consumption of own grown food as well as for income generating activities. Evidence shows that the potential return on investment of rehabilitating 1 hectare of land can exceed US\$1000 in certain cases.

**\$1,700:**

The cost of rehabilitating **1 hectare (2.5 acres)** of degraded land with our interventions.



**\$2,800:**

The potential profit made of **1 hectare** of rehabilitated land under our interventions (thanks to increased yield as well as income generating activities such as beekeeping).





## Case Study: Domwe Irrigation Scheme

Domwe village, in Blantyre District was highly affected by environmental degradation. Communities were cutting trees to make charcoal, among other negatively impacting activities. Deforestation led to uncontrolled flash waters coming from the hill, washing away crops and houses. Domwe's farmers food production was plummeting every year.

To address this, WFP supported community members to dig deep trenches as well as plant trees to stop the area from flooding and preventing the erosion of fertile topsoil. Water retained in the trenches and other interventions helped farmers increase their yield.

It also recharged the water table making the introduction of solar-powered irrigation possible. The solar-powered pumps provide the water for vegetable gardens and cash crops.

Five hectares are now irrigated where farmers grow tomatoes, eggplants, carrots and onions. The irrigation scheme is gradually improving the food security and economic opportunities.

WFP has linked farmers to markets and farmers started selling onions and tomatoes to supermarkets in Blantyre.

*"When I was a child, the hill surrounding our village was green and had a thick forest but we started cutting trees to make charcoal. This led to flash waters coming from the hill, washing away our crops and houses.*

*In 2017, we started digging deep trenches to protect the area from flooding, protecting the crops planted and preventing the erosion of fertile topsoil.*

*The water retained in the trenches recharged the water table making a solar-powered irrigation scheme possible.*

*Today, I grow tomatoes, eggplants, carrots and onions. I used the money from the sales to buy food for my family and I have also opened a shop.*

*Rabson Dibwa, Smallholder farmer in Domwe*

### IN NUMBERS

1. In total, Domwe irrigation scheme **set up cost was USD 40,000**
2. It benefits **80 participating families** since 2019.
3. In 1 season, in average, 1 farmer get surplus **income (net profit) of USD 100.**
4. The **scheme can bring USD 8,000 of surplus income** to all participants in 1 season
5. The **return on investment** (set up cost (1) – profit generated (4) ) will be made in **5 seasons** (2.5 years).

