



# THINK NATURE

IMPROVING COMMUNITY RESILIENCE THROUGH NATURE-BASED SOLUTIONS



With funding from









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*\* The picture of the earth on page 7 was taken at NASA's 'HyperWall' Exhibition during the 2014 World Parks Congress in Sydney Australia.*



## Think Nature

“  
*If you destroy Nature,  
Nature will destroy you*”

*- Wangari Maathai*





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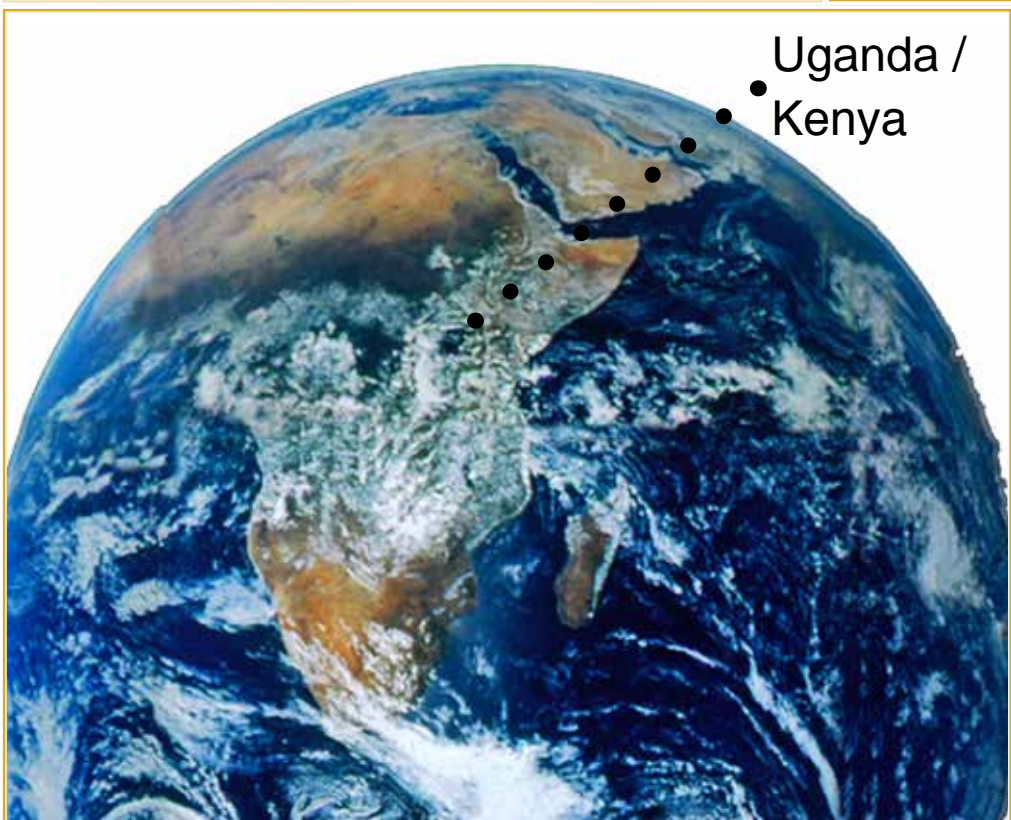


## What Nature Provides

Mount Elgon is located on the Ugandan-Kenya border. With its thick forests and many rivers, nature has always provided people in the region with an abundance of food, water, shelter, medicine, fodder, energy, and security.

Nature's services are too many to count.



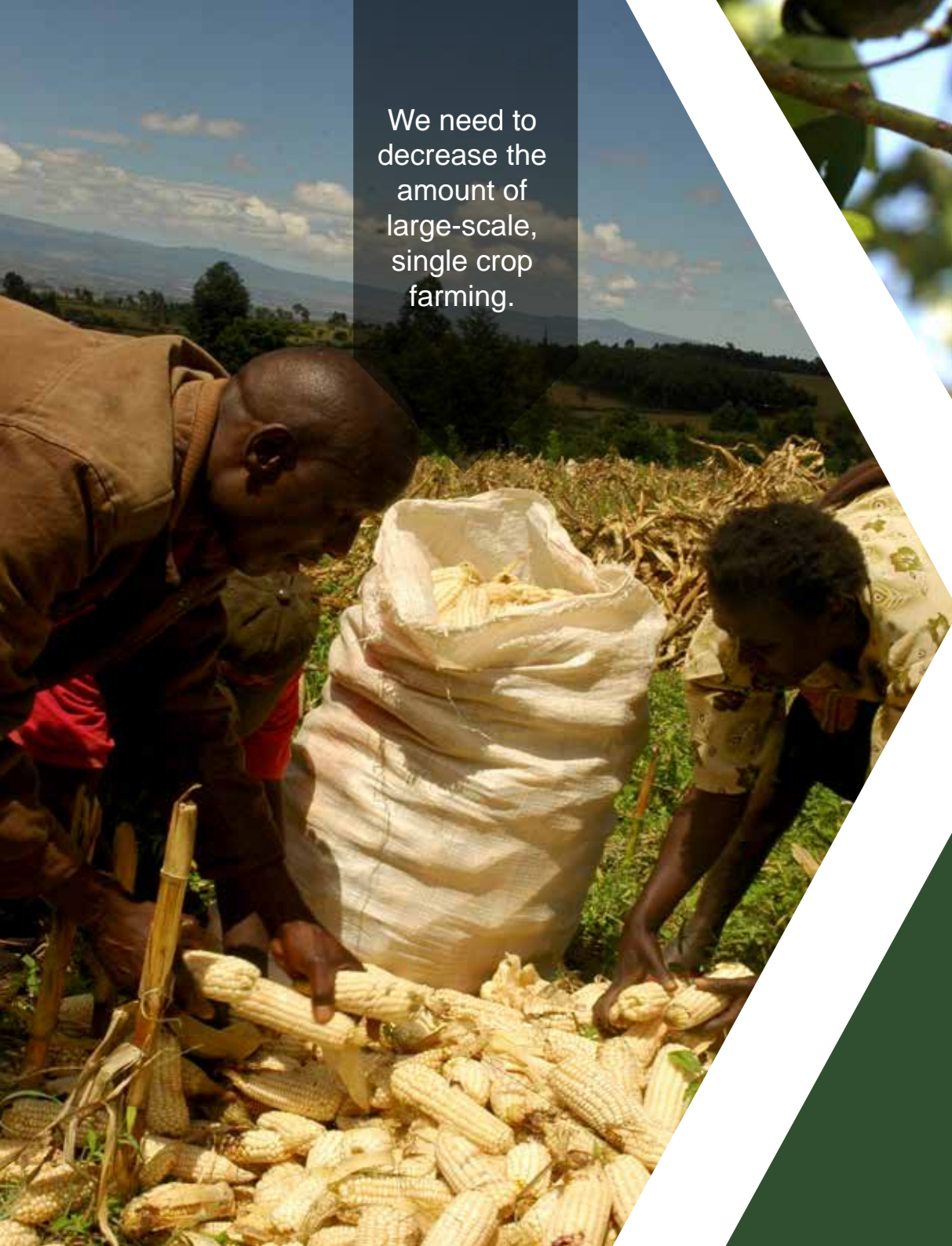







Well-managed forest landscapes with a great variety of plants and animals benefit all sectors of society.

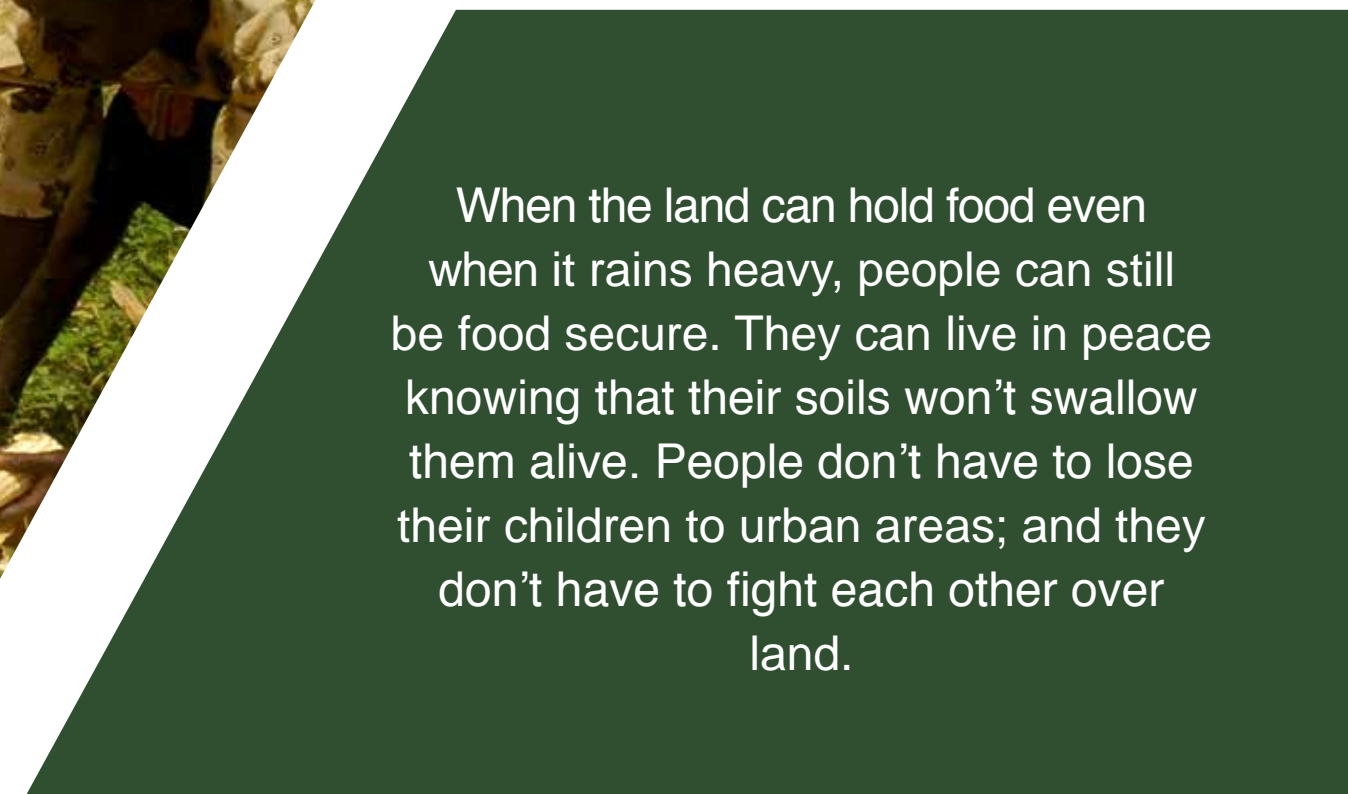




We need to decrease the amount of large-scale, single crop farming.



Planting a variety of crops makes — and keeps — the soil healthy.



When the land can hold food even when it rains heavy, people can still be food secure. They can live in peace knowing that their soils won't swallow them alive. People don't have to lose their children to urban areas; and they don't have to fight each other over land.

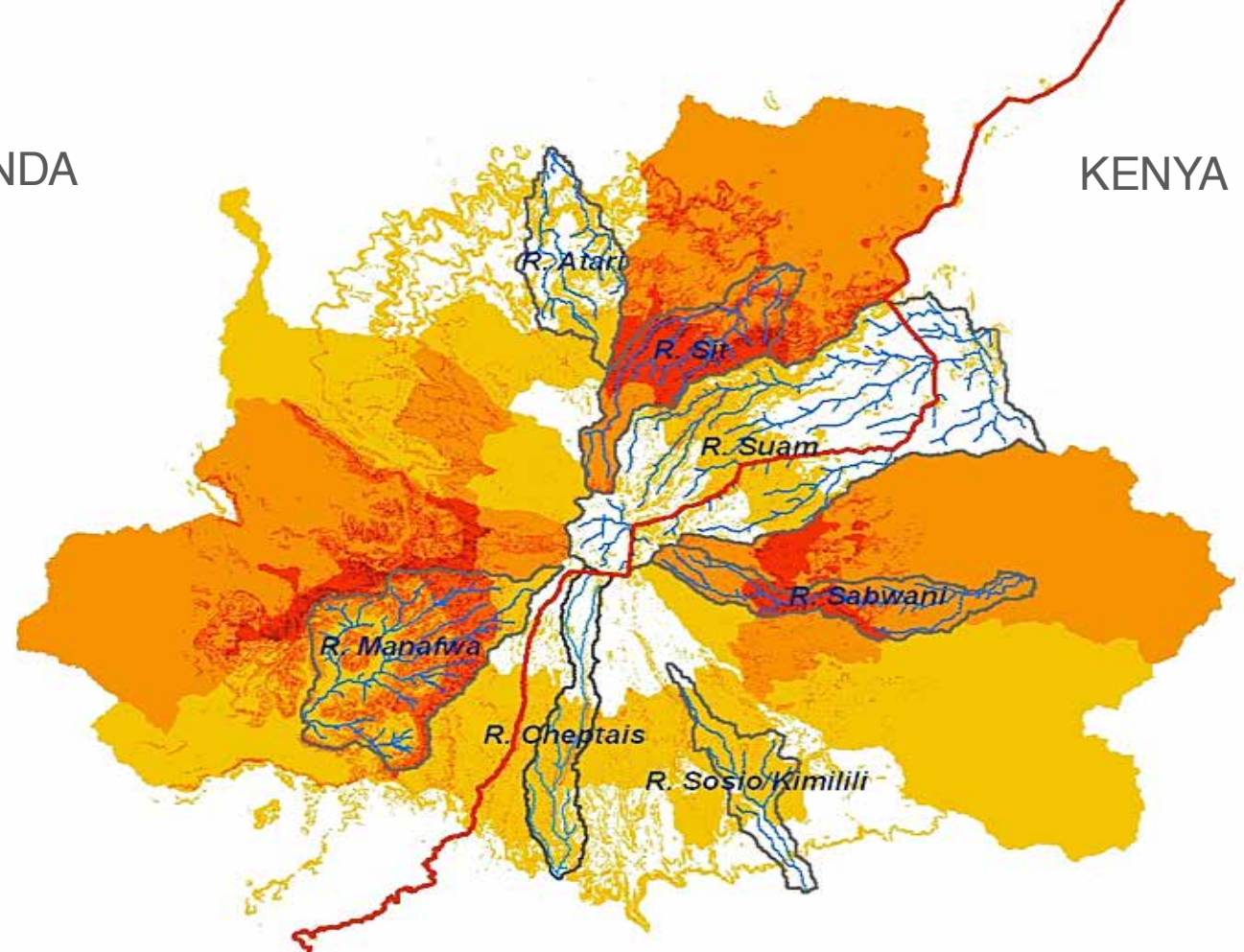
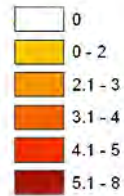


UGANDA

KENYA

### Mt. Elgon Cummulative Risks Value.

(The darker the colour, the higher the risk)



## Why landslides & floods are increasing


MAP: AFRICAN COLLABORATIVE CENTRE FOR EARTH SYSTEM SCIENCE,  
UNIVERSITY OF NAIROBI

In recent years, as population in the area grew, the demand for land to secure access to food, water, shelter, fodder, energy and security escalated. The thick forests became dominated by agriculture. Indigenous trees that nature provided to stabilize loose soils after heavy rainfall and hold excess water were heavily

reduced.

Today climate change causes heavier rainfall to an already unstable soil structure. This results in slope failure. Depending on which side of the mountain you are located, the risks of heavy rain are either floods or landslides.



An aerial photograph showing a vast rural landscape. In the center, a large, irregularly shaped reservoir or dammed lake is visible, surrounded by green fields and some trees. The land is divided into numerous small agricultural plots, some of which appear to be planted with crops. The background shows rolling hills and a hazy sky with scattered white clouds. The overall scene depicts a typical agricultural region in a developing country.

“Mt. Elgon used to be the agricultural county in Kenya and Uganda. The rich volcanic soils produced high quality crops. However, that was 10 years ago. Today, we have stony soils.”  
~ Sarah Bisikwa, Natural Resource Officer, Manafwa Uganda

Stony soils formed because the natural vegetation have been replaced with agricultural land. It is for this reason that floods and landslides, which used to occur once every 10 years, now happens every year.



## Land use & cover changes







Look closer on the surface and you can see the maize grows poorly; the root shows decay before it has fully matured to produce multiple corncobs.

**THE PROBLEM:** Large-scale single crop farming, especially maize & overusing the land.

**THE IMPACT:** Reduced soil fertility & the ability of the soil to hold water.

**THE RESULT:** Less food because of depleted soil nutrients & reduced ability of the soil to hold water.



The maize grows sparsely because of reduced soil fertility.



**THE PROBLEM:** People are cultivating too close to the river.





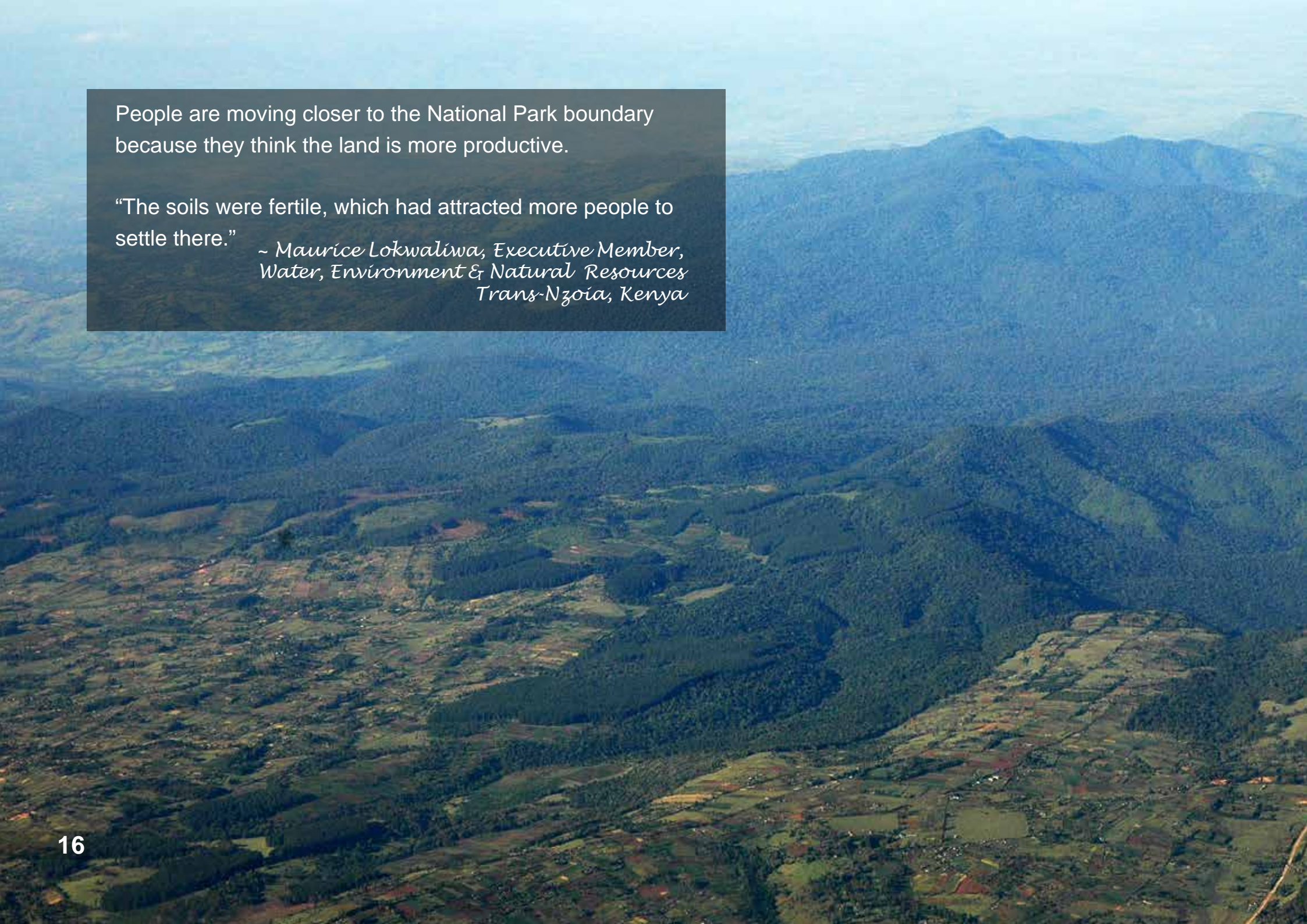


**THE IMPACT:** The river loses its ability to slow down water flow. The increasing speed of the water causes pressure that breaks down rock particles.

**THE RESULT:** The soil is eroded and the banks become wider and deeper. Riverbanks expand & collapse. An increase in sediments, water pollution and floods.







People are moving closer to the National Park boundary because they think the land is more productive.

“The soils were fertile, which had attracted more people to settle there.”

*~ Maurice Lokwaliwa, Executive Member,  
Water, Environment & Natural Resources  
Trans-Nzoia, Kenya*





There is no forest cover on the hill to the left.

**THE PROBLEM:** Increasing population pressure on the land means that indigenous trees are cut down to make way for agricultural land. Overuse of the natural resources further reduces diminished native tree cover.

**THE IMPACT:** Deforestation and land fragmentation. Small, disconnected forest covers.

**THE RESULT:** Diminished soil nutrients. Soil erosion. Increased landslides or floods.



# Dealing with floods & landslides



## The four scenarios to deal with floods and landslides

1. Business as usual
2. Resettlement of communities
3. Investments in modern engineering solutions
4. Investments in nature-based solutions

## Which would you choose?

“Rain in the Mount Elgon region is for us a time to really worry; because of the deforestation of the mountain the water comes running down the slopes in great quantities and with great speed. The water does not care where our fields are or where we live. It is unstoppable. Our fertile soil washes away and sometimes we lose our crops; but the largest threats are landslides caused by the rain.”

~ *Mary Kuloba, Community member  
Bumakasala Village, Uganda*





## IMPROVING THE RESILIENCE OF ECOSYSTEMS & COMMUNITIES TO REDUCE THE RISKS OF FLOODS & LANDSLIDES

*If nature is the problem,  
then nature is also the solution*

“In high risk areas of Mt Elgon – with the help of IUCN – we can show that if we use nature-based solutions, we can reduce the challenges of floods and landslides. Not only is it effective, it is also cheaper. In fact, we are working on **nature-based solutions** to

strengthen the **resilience of ecosystems** by improving the water runoff infrastructure on the farming fields, so that the soil does not wash down into the rivers. We strengthen the **resilience of communities** by increasing their productivity. We help them to diversify their crops and we introduce new livelihoods, such as beekeeping. We invest in learning by doing of community members and we stimulate self-organization.”

*~ Sarah Bisikwa, Natural Resource Officer,  
Manafwa District, Uganda*





## What is resilience?

**T**o be resilient is to prepare for the uncertainties of tomorrow. People experience surprises from political, economic, financial and / or environmental shocks. Yet, for every stumble, communities have learnt how to pick up the pieces and move forward. This spirit of survival, adaptation and flexibility is what helps one overcome challenges. That is what being resilient is all about.

**T**he path to being resilient lies in working through the stress and pain of lack of resources, natural disasters, and more. We acquire resilience when we gain the necessary skills and knowledge to handle stressful situations. Being resilient also gives us peace of mind. When you save money for a rainy day, you are being resilient because you are prepared. When you plant a variety of crops that can help you in times of

drought or floods, you are taking precautions and thus being resilient. You might not be able to stop flooding, but you can build protection using natural solutions to withstand the effects of flooding.

**W**hen we share natural resources, we need everyone's input to jointly plan and manage them effectively. Only in this way we are better prepared for potential shocks.





**LEFT:** Kurusumu Wastemba with her son, Subayi who was 6 months when the landslide uprooted their family.

**RIGHT:** Kurusumu with her husband and children. They lost their home as a result of the landslide in the background.

## Why improve resilience?

“I know very well where I was on 25 June [2014] at 14.00 hrs. I was in the kitchen cooking, while listening to the news on Open Gate Radio station. I had my six month old son Subayi Mangongo on my back.

Suddenly, there was this noise; The floor trembled. I ran outside and saw what happened. I panicked and ran away. I fell and ended up in the hospital. My baby was wounded too, but we luckily got a free treatment. He is now becoming a healthy boy. When he grows up I will tell him exactly the way a landslide happens and what happens if soil washes away when there is no forest. As our home and all our land was washed away, I will advise him to stay in school and make sure he gets a good job later to earn money to buy a piece of land elsewhere.”

*~ Kurusumu Wastemba, farmer  
Bumakasala Village, Uganda*







**LEFT:** BUILDING A TRENCH TO CAPTURE EXCESS WATER. People who lost their crops in a flood participate in a nature-based solutions after seeing positive results at the learning centre.



**RIGHT:** KULOBA JAMES talks about his experience during the landslide that uprooted his family during the Bumakasala Landslide on June 25, 2012.

IT IS MORE EXPENSIVE TO CONTINUE WITH BUSINESS AS USUAL.

“Eight people died, four bodies were recovered, four are still missing. Twenty five houses and a school were destroyed. A great number of cows, goats and chicken were lost. The army tried for months with heavy equipment to salvage what could be saved, but that was all in vain.

The government promised to implement resettlement plans; but so far, we heard nothing about these plans. Today, four hundred and fifty households that are located near the high-risk landslide mountain slopes are still at great risks. There are many visible cracks that will give in once it rains heavy again. It is a matter of time. What will happen to us then?”

*~ Kuloba James, farmer  
Bumakasala Village, Uganda*





ARTHUR MUGISHA, PHD  
HEAD OF OFFICE  
IUCN EASTERN & SOUTHERN  
AFRICA REGIONAL PROGRAMME  
KAMPALA, UGANDA

## Why invest in nature-based solutions

“So far we have diversified our crops. We can now expect more income from the local vegetables, bananas, avocados and mangos we have planted as part of the project. Our soil is improving, which is promising for the diet and health of our families. We have learned that the exotic trees we used to plant are bad for our soils. IUCN taught us which indigenous trees and grasses are good for our soil. They also taught us to use mulching and manure instead of chemical fertilizers. We have started to build contour trenches and to dig drainage channels in our fields to let excess rainwater flow into the river. When more villages do this it will reduce the risks of floods.”

*- Mary Karanja, farmer and team member, Kirũta Village, Kenya*

Climate change and its impacts are slowly but surely becoming a reality for all of us. This reality is true for rural communities who wholly depend on nature for their livelihoods. Climate change impacts natural resources such as water and soil, which in turn impacts agriculture, the main means of support for pastoral people.

The International Union for Conservation of Nature (IUCN) is working with rural communities who are part of Mt. Elgon's ecosystem to raise awareness of the impacts of climate change.

Through nature-based solutions, the IUCN is helping people in this region build their capacity to manage natural resources and improve their resilience to cope with floods and landslides.

These communities in Mt. Elgon are particularly vulnerable because they live in an ecologically fragile place. IUCN believes that nature-based solutions are a cheaper, long-term and sustainable investment option compared to modern engineering solutions or resettling communities. It is also a smarter choice of sustainable development

practices as it builds on indigenous knowledge, as well as the perception of local communities about their natural world. Our observations thus far makes us confident that nature-based solutions are the best scenario to deal with environmental disasters.

We call upon all key partners, especially governments, non-governmental organizations, civil society and donors to rally behind local communities of Mount Elgon to ensure we promote nature-based solutions that are sustainable.





## The Resilience Framework

The IUCN proposes a Climate Change Resilience Framework, which focuses simultaneously on four different levels of interventions listed on p. 25 that can effectively reduce the risks of floods and landslides.





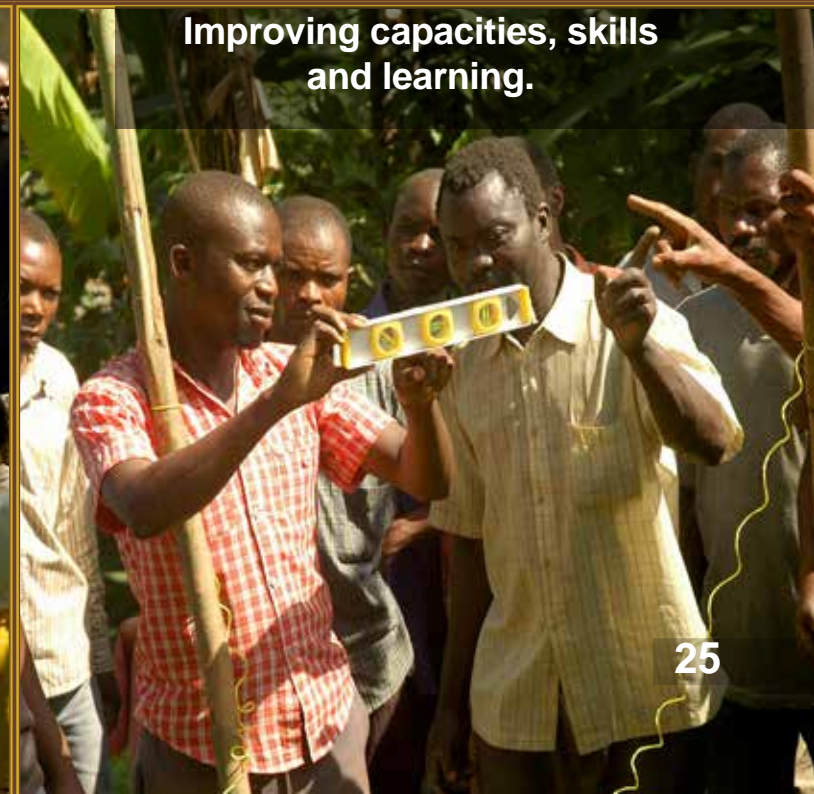
**This canal for excess rainwater is an example of sustainable water infrastructure.**



**Diversify markets, crops and nature.**



**Enhancing self-organisation among communities.**



**Improving capacities, skills and learning.**



## Diversifying markets, livelihoods & nature







**COFFEE HARVEST** - By making the change from monocultures to diversified crops, people have increased their income.




Alice Nakhungu and her husband, Justine Odour at their four fish ponds in Makhele Village, Kenya.

**“I don’t work. I tried to find a way to help my kids to go to school. I have four fish ponds, thanks to IUCN who helped me realize I can turn a problem into a benefit. Excess rain water ends up on my farm, but we also have a fresh water pipe; It ensures some kind of water circulation. I harvest one pond per month and earn 800 Shillings. The best part, my son is now in form four with the fish I sold. I also help the community as they don’t have to go to town anymore to buy fish. They too are saving money.”**

*~ Alice Nakhungu, farmer and team leader  
Makhele Village, Kenya.*






People have demarcated and are restoring riverbanks by planting indigenous trees. They also are reintroducing contour trenches and contour bands for soil and water conservation.

## Building sustainable water & land infrastructure

Contour trenches and contour bands slow down the flow of water.




A close-up photograph of a Napier grass plant with several green leaves and a reddish-brown flower head. The background is a blurred field of similar plants.

Indigenous trees and grass species are planted to reduce soil erosion.

The IUCN project helps farmers to improve their crop fields in many ways; In order to slow down soil erosion and water flow, communities are taught to build contour trenches and contour banks. Alongside the trenches, they plant Napier grass and indigenous trees that were growing here before; their long roots retain water & soil.

“Originally we used to dig up to the river. When IUCN came they taught us how to demarcate six meters away from the river and why we have to plant indigenous trees and grass so that the soil is no longer washing away with the water.”

*~ Young farmer,  
Mabuku Village, Uganda*

A photograph of a farmer wearing a red jacket and a hat, standing in a field. A narrow canal runs through the field, and rows of Napier grass are planted along its edges. The background shows a line of trees under a cloudy sky.

Canals are dug to transport excess rain water that would otherwise flood crops. Napier grass is then planted along the canals to stabilize soils and also provide fodder for livestock.



## Enhancing self-organisation



SARAH BISIKWA  
NATURAL RESOURCE OFFICER  
MANAFWA DISTRICT  
UGANDA

COMMUNITIES ARE WORKING WITH LOCAL AUTHORITIES TO STRENGTHEN NATURAL RESOURCE GOVERNANCE. ALTHOUGH IUCN SET-UP THE PLATFORM FOR LOCAL INTERACTIONS TO ARISE, THE PROCESS IS SPONTANEOUS. SELF- ORGANISATION IS IMPROVING INFORMATION FLOW, PLUS IT CREATES DIALOGUES AND ENCOURAGES PLANNING TOGETHER WITH A WIDE RANGE OF STAKEHOLDERS.

“We now have the first evidence that the IUCN resilience approach brings positive change in many respects: by planting trees, shrubs and grass we prevent uncontrolled water run off. By making trenches on terraces and restoring riverbanks with the same indigenous trees of the forest that was here many years ago, we prevent the washing away of fertile soil in the rainy season.”

~ Sarah Bisikwa, Natural Resources Officer,  
Manafwa District, Uganda





## Busamo Women's Group Songs

THE WOMEN'S CHOIR SPONTANEOUSLY CAME TOGETHER TO RAISE AWARENESS ABOUT USING NATURE-BASED SOLUTIONS TO DEAL WITH LANDSLIDES.

### *The story of the orphans & widows about the landslide*

Papa give us advice! How do we deal with the landslide problem?  
The boulders and trees will continue to come rushing down if  
you don't pay attention.  
Papa give us advice! How do we deal with the landslide problem?  
Plant trees from the old days. Plant grass on the terraces.  
Papa give us advice! How do we deal with the landslide problem?  
Take care of the soil. Take care of our land.  
Take care of the future.

### *'The help of tree and elephant grass'*

If we plant trees and elephant grass,  
we will minimize the run off of water.  
If we plant trees and elephant grass,  
we will keep our fertile soil.  
If we plant trees and elephant grass,  
we will reduce the risks of landslides.



## Improving capacities for learning

Mt. Elgon has hard bedrock underneath its soil. Indigenous trees can penetrate the bedrock; their roots dig past the bedrock in search for water. Compared to eucalyptus trees, which are abundant in the area, indigenous trees are always thirsty and thus soak up excess water that would otherwise cause floods or landslides.





MARY NAMBUA  
TEAMLEADER OF THE  
LEARNING CENTRE  
MABUKU VILLAGE  
UGANDA

LEARNING CENTRES HAVE BEEN SET UP TO HELP COMMUNITIES CHANGE THEIR SOIL AND WATER MANAGEMENT PRACTICES.

“The County Agricultural extension officer help us with advise, seedlings, tools and training. They also broker the support from IUCN.

The IUCN program coordinator supervises and facilitates our work. He also gives us advise about how best to proceed. Each team has team leader who is elected by the village. The team leader is responsible for sensitizing the village households. He or she demonstrates how to plant and organizes joint activities for soil and water conservation. We work as a group and have regular meetings to monitor progress and address challenges.”

*~ Mary Nambuba, farmer  
Mabuku Village, Uganda*





## The Way Forward

“If we continue this joint work, in ten years we will have enough food, enough clean water, trees for timber. Our hygiene and health will have improved. Literacy rates will go up as children do not have to miss classes. We will have savings for bad times and we will have the knowledge how to deal with too much rain or droughts. We may have more cattle and poultry. We will have a stronger community that can cope with climate change in this area.”

*CiCilyne Kiliswa, Farmer  
Sabwani Village, Kenya*

“We are aware of the fact that when we upscale the project we also need to extend our cooperation to the national level to look for ways to prevent downstream floods. I am confident that together we can have a great positive impact in the near future”

*Sarah Bisikwa, Natural Resources  
Officer, Manafwa District, Uganda*







MAURICE AMANA LOKWALIWA  
EXECUTIVE MEMBER  
WATER, ENVIRONMENT & NATURAL  
RESOURCES  
TRANS-ZOIA COUNTY GOVERNMENT  
KENYA

## An Integrated Approach

“The strength of the International Union for Conservation of Nature’s Project is its integrated approach. It does not only benefit the environment. The education, agriculture, infrastructure, and health sectors also benefits.”

~ *Maurice Lokwaliwa*

“In the **Agriculture Department**, we are closely connected with the IUCN project. We are confronted with farming that does not take into account river conservation. This then contributes to the problem of floods and the loss of fertile top-soil.

Floods mean no useful crops; maize dies in water and we cannot produce rice when it floods. It is for this reason that we support the IUCN approach of introducing a variety of vegetables and fruits to diversify people’s food supply and income.

We are also thinking of riverbank restoration and using excess water for irrigation. We support the organic farming initiatives in the project. We should promote that much more than we do now. We are now also offering IUCN tree nurseries that we are setting up.”

~ *Edward Osanya*

“In our **Health Department**, we are dealing with floods since 2000. No clean water means a great number of people have to be treated for malaria, dysentery, malnutrition, among other waterborne diseases.”

~ *Anaya Fastus*

“In our **Gender & Youth Department**, we are in direct contact with women groups. Some are quasi dormant and looking for meaningful activities. Maybe we should connect them to the project. Women could be mobilized as consumers of alternative energy, which also helps to reduce the pressure on the forests.”

~ *Shadrack Kirop*

“In our **Education Department**, we are confronted with the impact of floods on kids. In some low-lying areas they cannot go to school for long periods. We are thinking of including the subject of environmental conservation in all 500 primary schools. ***Environment clubs could be mobilized to upscale the IUCN project.*** We would need posters with the message ‘Think Nature.’”

~ *John Meng’wa*







This book documents the **Implementing a Resilience Framework to support Climate Change Adaptation in the Mt Elgon Region of the Lake Victoria Basin** Project.

**Project Funded by:** The United States Agency for International Development (USAID)



**Project Implemented by:** IUCN Eastern and Southern Africa Regional Programme, Uganda Office



**Project Partners:**



**Project Sites:**

- Bushiye Sub-county (5 villages) in Manafwa Catchment, Bududa District, Uganda
- Buhabutsi and Tsekululu Sub- counties (4 villages) in Manafwa Catchment, Manafwa District, Uganda
- Kortek and Chepkwatsa Sub-counties (15 villages) in Swam Catchment, Bukwo District, Uganda
- Amuka, Kwanza and Namanjalala Sub-locations (22 villages) in Sabwani Catchment, Trans Nzoia County, Kenya





**WANT TO KNOW MORE ABOUT IUCN AND ITS RESILIENCE  
FRAMEWORK? CONTACT US:**

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“Before IUCN came, people were planting only maize; but since IUCN came, people have now created a culture of planting indigenous trees. We are all doing it as we found that these indigenous trees are helping us to control soil erosion and degradation. We are also growing other crops like fruit trees that are beneficial for our health.”

*- A farmer from Mt. Elgon giving  
testimony about the impact of the  
IUCN Resilience Framework*

