

Why irrigation holds key to region's food sufficiency in the era of climate change

Continent continues to depend on costly food imports from rest of world due to poor farming techniques

BY RATIN NEWS WRITER

Heavy reliance on rain-fed agriculture by eastern and southern Africa countries is compromising food security in the region amid growing negative effects of climate change.

Rainfall patterns have become unpredictable world over due to human activity which has destroyed the environment resulting in a build-up of carbon dioxide and other greenhouse gases that cause adverse weather conditions such as flooding or drought.

In the absence of predictable rains, farming is greatly curtailed because one cannot plan planting or harvest seasons.

Instead of bumper crops from its rich soils, Africa still has an annual food-import bill of \$35 billion — a situation largely linked to failure to adopt new farming technologies in the wake of the biting effects of climate change.

Farmers, however, have an option to restore predictability through irrigated farming and boost their yields and earnings and replicate other booming key sectors such as telecommunications that have helped revolutionise lives of millions of people.

A recent report by agriculture think tank Tegemeo Institute, dubbed *Can irrigation benefit resource poor farmers in Kenya* revealed that there are a lot of benefits that come with this type of farming.

According to the research, a farmer using irrigation will make a profit of \$82 per acre while a grower using rain fed agriculture will earn \$50 as profit from the same field.

"Irrigated maize comes with high output, high income and high profit in comparable fields," said Dennis Otieno, a researcher with Tegemeo.

Food sufficiency

Zambia, a country that has enjoyed stable food security over the years, is banking on irrigated farming to further boost its food sufficiency.

"African states need to cut reliance on the rain-fed agriculture and embrace irrigation for the sake of food security in the



A section of workers at the point where water from River Galana will be pumped through to the farms. PHOTO: EAGC-RATIN

continent, as a country, we have already put measures in place to promote this type of farming," said Mr Given Lubinda, Zambia's minister for Agriculture in an interview with the *EAGCRATIN* in Lusaka last month.

Creating awareness

Mr Lubinda said irrigation is the only way towards meeting the food requirements in the continent that has for long been hit by perennial food shortages.

The effects of climate change, as it dawns on African states, the governments in the region have started putting measures in place to promote irrigation and cut dependence on rain-fed agriculture.

In Zambia, just like many other states in the region, the government is offering subsidies to farmers as well as educating them by creating awareness on irrigation so that they can embrace this type of farming.

In Rwanda, more than 800 small-scale irrigation projects are lined up to receive financial subsidies under a new government initiative to forge partnerships between farmers, credit institutions and service providers.

According to State minister for Agriculture and Animal Resources, Tony Nsanganira, the projects will be linked to financial institutions and service providers for a further analysis before they can be funded, according to *The New Times* of Rwanda.

"We are currently categorizing them and closely working with credit institutions and development partners to ensure they get the necessary support," Nsanganira said.

The newspaper reports that the government last year put a 50

per cent subsidy on importation of irrigation equipment, to boost productivity and agro exports.

The ministry has so far registered more than 800 projects seeking to benefit from subsidies. The Rwandan government is also targeting to develop at least 10,000 hectares of irrigated land by 2017/18.

The head of land husbandry, irrigation, and mechanization department at Rwanda Agriculture Board Innocent Nzeyimana, said only five per cent of about 35,000 hectares of land has been irrigated under this particular scheme.

The Ministry of Agriculture in Rwanda has an annual target of at least 2,000 hectares every year to be able to cover more than 50,000 hectares by 2018.

In Zimbabwe, the government is taking urgent measures to promote irrigation farming following the recent announcement by a regional body that the country will not receive enough rainfall between now and next year.

Southern African Regional Climate Forum (SARCOF) has announced that Zimbabwe is among Southern Africa Development Community countries that will receive normal to below normal rainfall in the 2015-2016 season a move that is likely to affect food production in a country that is already grappling with shortage of grain.

Meteorological Services Department in Zimbabwe has so far confirmed the forecast by SARCOF, forcing the government to

rethink dependence on rain-fed agriculture.

Zimbabwe's Agriculture minister John Made is leading the state in championing for the uptake of irrigation to secure the southern African state from hunger.

Over the last couple of years, rainfall amounts, not only in Zimbabwe but also in other African states, have become lesser and lesser and highly erratic as climate change becomes a threat to food security in the continent.

Zimbabwe's food security is under threat at the moment, with the state food agency disclosing that its strategic grain reserve (SGR) is holding much less stock than is required.

Poor yields

As of July this year, according to a state agency, the SGR was holding only 118 000 tonnes of maize instead of 500 000 tonnes needed at any given time to be distributed to deficit areas.

The shortage will see the country export more than 700,000 tonnes of maize this year in order to forestall the looming hunger. The deficit was caused by poor yields that the country suffered this year.

Zimbabwe requires about two million tonnes annually for both human and livestock consumption but has been failing to meet its requirements for more than a decade now, following poor harvests caused by various factors.

These factors comprise a lack of inputs, production inefficiencies, erratic rains and diversification by many farmers from maize to cash crops, especially tobacco.

In Kenya, the Israeli gov-

ernment, which is helping the government in implementation of the one million acre project at the Galana-Kulalu irrigation scheme, has pledged to fund training of Kenyans on best irrigation practices to boost food production.

Water and Irrigation Cabinet secretary Eugene Wamalwa said the training would help boost Kenya's capacity to run mega irrigation projects.

Local capacity

"As we bring more land under irrigation, we must build local capacity to ensure we have enough technical experts. The Israeli government will be putting in about \$27 million for the technical training," said Mr Wamalwa.

The Israelis are running a pilot project in Galana-Kulalu, Kenya, to determine the productivity of various maize seeds on a 10,000-acre piece.

Mr Wamalwa urged Coast counties, where the project is based, to support the initiative, which is expected to boost food security.

"They (Israelis) had proposed a training institution at Galana. We will be very happy to partner with the Coast counties in training our young people in building our expertise," he said.

Apart from Galana, the Kenyan government is also expanding other small-scale irrigation schemes across the country as it seeks to diversify from the traditional rain-fed agriculture.

Farmers at the Pekerra Irrigation Scheme in western Kenya, will benefit from expanded acreage after the National Environment Management Authority (Nema) received the results of a study on the impact of the project in the region.

“Irrigated maize comes with high output, high income and high profit in comparable fields

~ Researcher, Dennis Otieno, Tegemeo Institute



A water pan at Ihindu irrigation scheme, in Naivasha, Kenya. The National Irrigation Board is supporting this water harvesting projects in the region. PHOTO: EAGC-RATIO

Nema, through a gazette notice, said it has received a study report for the proposed project by the National Irrigation Board (NIB), which seeks to expand the Baringo-based scheme by 2,000 hectares. The project aims at improving food security in the region that has been hit by hunger due to drought.

Last year, part of the irrigation scheme was affected by severe dry weather that saw the water level in some of the sections decline, making it unable to sustain the projects hence subjecting growers to losses.

The scheme relies on water from the rivers Pekerra and Molo, which flow through the county.

Farmers in the scheme mainly grow seed maize that they sell to the Kenya Seed Company, earning between \$0.68 and \$0.75 per kilo depending on the quality and variety.

Revenue streams

Project manager George Omondi says the scheme will be introducing commercial maize farming to diversify farmers' revenue streams.

Other crops grown, though in small scale, include highland rice, onions, tomatoes, paw

paws and water melons.

Mr Omondi said they are currently negotiating a deal with the East Africa Breweries Ltd that would see farmers enter into an agreement to grow sorghum for the firm.

Farmers at the scheme pay a fee of Sh2,000 per month to National Irrigation Board (NIB), which is mainly used in maintenance of the infrastructure. They also pay for the water.

Kenya has a potential of irrigating three million acres of land annually, but despite this huge ability, only 450,000 acres is under irrigation owing to strained water resources in most parts of the country.

Irrigation potential

In every rainy season, hundreds of thousands of liters of water go to waste, despite the fact that it can play a significant role in increasing the acreage under irrigation.

The move has compelled NIB to initiate the first water harvesting project in Nakuru County to benefit farmers from the run-off water with the view to supplementing the natural water sources in the country.

NIB is tapping the surface run-off to feed the dams at Ihin-

du irrigation scheme in Naivasha, a project that is benefiting more than 300 households who no longer have to wait for rains to plant their crops.

Njuguna King'ang'a, is one of the farmers whose joy represents other growers in the region reaping the benefit of water harvesting.

"We never used to get enough water for our farming needs from the rain, it was not until when the NIB stepped in to utilize the run-off that we can now talk of having sufficient water to farm at any time of the year," said Mr King'ang'a.

Raphael Ogendo, NIB coordinator in the region, says Naivasha receives less than 680 millimeters of rain annually, which is not enough to meet the farming needs.

Farming needs

"This region requires almost 1,000 millimeters of rain annually in order to meet all the farming needs," said Engineer Ogendo.

NIB currently supplies farmers with water that is enough to irrigate a third of an acre every day for both outdoor and indoor farming (greenhouses).

Farmers are not required to pay any fee for the service; all they are required to do is to buy their own storage tank and a water pump for the exercise.

When it rains, the water is collected and channeled to the dams, according to Eng Ogendo. The four dams have a total capacity to hold more than 45,000 cubic meters of water.

"The first dam has a capacity of 20,000 cubic meters, the second one has the ability to hold 15,000 cubic meters while the third and fourth one have the capacities of 10,000 and 15,000 cubic meters respectively," he said.

Maintaining the scheme, says Eng Ogendo, is not expensive at all when compared to other irrigation schemes given the fact that they do not use fuel or electricity to pump water from the source to the farmers.

"This water flows all the way to the farms by gravity at a speed of 89 liters per second, this has been significant in cutting down the cost of operations at the scheme," he noted.

Farmers have water pans on their farming field where the water directed to from the main dams, before they can pump it themselves to the storage tanks.

The growers have embraced drip irrigation system, noting that this type is more efficient as it does not consume more water when they irrigate their farms.

In dry spell, farmers are better placed to continue with their farming activities owing to availability of water, and when it rains, they stop using the storage water but instead utilize the rain as they store more water for a dryer season.

Mr King'ang'a says he earns up to \$400 every month from a third of an acre farm from the horticulture produce that he grows.

"Farming is all about timing, I make handsome returns from my produce because of this irrigation project.

I plant during dry season when a lot of farmers are waiting for rains before they embark on farming, as a result, there is always high demand for my produce at the market owing to the shortage," said the farmer.

Many farmers who are covered under the Ihindu irrigation project mainly practice horticulture with many of them growing tomatoes, onions, cabbage among other crops, with their main market being Nairobi.

\$35bn

The annual food-import bill of the African continent despite rich agricultural production. The situation is largely linked to failure to adopt new farming technologies in the wake of climate change.

450,000

The size of land in acres is under irrigation in Kenya out of a potential three million acres.

800

The number of small-scale irrigation projects in Rwanda lined up for financial subsidies under a new government initiative to forge partnerships between farmers, credit institutions and service providers.



One of the centre pivots, used for irrigation at the Galana-Kulalu irrigation scheme in Kenya. PHOTO: EAGC-RATIO