



# STATUS REPORT

ON THE

# NJORO RIVER REHABILITATION

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*Transforming Lives through Quality Education*



NATIONAL TREE PLANTING DAY HELD ON 13<sup>TH</sup> NOVEMBER 2023 WHERE 14,000 TREE SEEDLINGS WERE PLANTED IN SUPPORT OF THE PRESIDENTIAL 15 BILLION TREE GROWING CAMPAIGN.



SO FAR, THE UNIVERSITY HAS PLANTED OVER 200,000 TREE SEEDLINGS IN PARTNERSHIP WITH OTHER STAKEHOLDERS.

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## Njoro River Rehabilitation Project



Prof. Isaac O. Kibwage  
Vice Chancellor

# Egerton's Passion for Environmental Conservation

Egerton University prides in being the regional champion and advocate of environmental conservation by providing high quality degree programmes in Environmental Science and Agriculture. The University lies within the Mau Complex ecosystem, and for the last two decades it has been rehabilitating Shururu forest. Through the faculty of environment and resource development (FERD), the University together with other partners established the Mau Regional Centre of Excellence (Mau RCE) in 2011. The goal of the RCE Mau is to promote public awareness, education and training to enhance sustainable development and build the capacity of RCE Mau Community to achieve sustainable development. In view of this the RCE Mau Complex continues addressing issues of deforestation, indigenous rights, indigenous knowledge, climate change adaptation and mitigation.

The effects of climate change to

the economy of our country can not be underestimate. Climate changes effects in Kenya have led to droughts and floods that threaten food security and increased water borne diseases. In Mau ecosystem for instance, there has been systematic degradation since 1990s occasioned by the demand for charcoal, farm products and timber to support growing economies of towns such as Njoro, Egerton, Nakuru City and many others. Illegal logging of indigenous trees, over grazing, arable farming among others have greatly affected the indigenous communities that relied on this natural ecosystem for their livelihoods. Rivers that drained from this ecosystem are no longer clear but instead are loaded with sediments and pollutants from agricultural activities.

Trees and grass that belted the banks of rivers and other water bodies are no longer there. It is important to mention that these tree belts commonly referred to as riparian tree corridors or simply vegetated buffer strips are



National Tree planting day held on 13<sup>th</sup> November 2023 where 14,000 tree seedlings were planted in support of the presidential 15 billion tree growing campaign



important in stabilizing streambanks, buffering of pollutants entering a stream from runoff, controlling erosion, and providing habitat and nutrient input into the stream. They also contribute to the balance of oxygen, nutrients and sediment, besides providing habitat and food for fauna. It is due to these filtration functions that streams and rivers are sometimes referred to as "Kidneys of the earth". Climate change coupled with rapid population growth is likely to stress water reserves in Kenya.

River Njoro, which flows from the Eastern Mau Escarpment is not exceptional. Because of its role in supporting the livelihoods of close to a million people, recharging our groundwater aquifers and biodiversity support, the University took a bold step in the year 2012 to conserve this ecosystem. So far, the university has planted over 200,000 tree seedlings in partnership with other stakeholders. The efforts have

borne fruits since two dumpsites that existed near the University have been fully rehabilitated and forests established where none existed before for example the source of Njoro River in Narok County. Community youth have since taken the management of these sites through the support of the University. Besides these sites, the University has established more than 20 acres of commercial tree plantation in the last 5 years within the University farm by continuously engaging staff and students in tree planting. The last event was done this year during the National Tree planting day held on 13<sup>th</sup> November 2023 where 14,000 tree seedlings were planted in support of the presidential 15 billion tree growing campaign.

Egerton University has demonstrated that it is possible to reverse the negative effects of environmental degradation within a very short time. Let me admit that this was an uphill task due to many challenges that were

witnessed over that period. Dwindling finances, unpredictable rain patterns, vandalism of rehabilitated areas, grazing on newly planted tree seedlings and many more. The key achievements from this project include securing of the source of the river, youth empowerment through tree nursery support, construction of livestock watering troughs and numerous community environmental sensitization seminars. I am calling other stake holders, notably the county governments of Nakuru, Narok, Kericho, Bomet and Baringo to continue with the conservation efforts of Mau Complex for the current and future generation. Egerton University will continue offering technical support where required  
Thank you.



Egerton University Vice Chancellor Prof. Isaac Kibwage (3rd right) received a Ksh2 Million cheque from KCB Bank as sponsorship to the 8th Edition of the Mau-Egerton University Cross Country event for environmental conservation. Celebrated World Champion Faith Chepng'etich (3rd left) was the Brand Ambassador of the event that took place on 8th February, 2023.



Message from Deputy  
Vice Chancellor  
Academics,  
Research and Extension



Prof. Bernard O. Aduda  
Deputy Vice Chancellor  
(Academics, Research & Extension)

## Njoro River Rehabilitation: From Degradation to Restoration

Out of the many rivers that flow from the Mau, Njoro River is the main river that contributes water to Lake Nakuru. Approximately 7 kms of the river flow through Egerton University towards Njoro Township. In the year 1999 -2000, the area witnessed a prolonged drought that caused almost 70% of this river to dry up since the river could not flow beyond the Egerton University bridge. This phenomenon was well documented by our researchers who wrote an article on effects of droughts on aquatic organisms in the International Review of Hydrobiologia journal in the year 2005. This publication and coupled with the shortage of water for domestic and livestock as well as alarming levels of pollution thereafter, acted as a wake-up call for the University management then to institute measures to save the river.

A rehabilitation team of four people was formed drawn from key departments such as Chemistry, Biological Sciences, Food and Nutrition and Dietetics. A coordinator was also appointed and

the office established within the then Division of Research and Extension to implement the rehabilitation. The terms of reference were to prepare a baseline report on the status of the Njoro River, to work with various stakeholders towards the rehabilitation of the Njoro River, to organize stakeholders' meetings, workshops and seminars for the rehabilitation of Njoro River, to carry out specific activities for the achievements of rehabilitating the entire river, to identify and promote out specific economic activities for the communities which live along the Njoro River, recruit postgraduate students to undertake studies which promote the rehabilitation of the river and to prepare quarterly reports for submission to the Vision 2030 secretariat.

Rehabilitation process started in the year 2012 and some of the key outcomes from this include several publications, community trainings on tree nursery management and water quality monitoring, 3 masters students supported, baseline report on the quality of water prepared. This river also acts as a laboratory for the

water scientists from the Department of water engineering and aquatic scientists from the Department of Biological Sciences and Environmental Science. Previously 5 members of staff did there Ph.D research on this river and 4 MSc. students excluding the three that were supported by the project. The team also won a grant 9 million from NRF to carry out research on "Linking Water Sources to household level among Riparian communities in the Upper Njoro Catchment". Pupils from the local primary schools were trained on conservation through this project and also given an opportunity to present their posters in one of the Nakuru ACK shows. As we ponder on the next move, I appeal to the government of Nakuru and Narok as well as other stakeholders to join hands and rehabilitate the remaining sections of this river for improved wellbeing of the common people. Egerton researchers will continue offering the necessary technical support.



Prof. Richard Mulwa  
Ag. Deputy Vice Chancellor  
(Administration, Finance & Planning )

Message from Deputy  
Vice Chancellor  
Administration,  
Finance and Planning

## Egerton University Supports Community Initiatives In Conserving The Njoro River



Egerton University is keen to work with the local administration to ensure that illegal encroachment of the riparian zones along the Njoro River is stopped



In line with the government's initiative to empower the youth through job creation and increase of forest cover to mitigate climate change, Egerton University has been in the forefront of engaging youth in tree planting activities every year. The Njoro River Rehabilitation initiatives involved both riverine enhancement and environmental quality improvement. To this end, two sites were identified for action in the year 2012; the first site was the source of the river at Entiyani in Narok County where the University fully restored the source of the river through a concerted participatory effort of ensuring the indigenous vegetation cover around the source spring of the river was rehabilitated. The second site of action was at St. Augustine Catholic chaplaincy near Egerton University's main gate. At this site combined efforts with the community to clear a longstanding illegal dumpsite and constructed

water drinking pans for animals to stop them from trampling on the river edges and defecating in the river. These initiatives have improved the living environment of the community around the site. In the delivery of these initiatives Egerton University has been engaging the youth in the community as casual workers as a way of earning income.

One way of ensuring the trees planted survived at 100% the University supported the community by offering contractual employment to two gentlemen, each from the respective sites; this also helped to encourage community ownership of the efforts. The University planted more than 200,000 tree seedlings at both sites that the care takers have managed. The University also supported five community tree nurseries by providing 1000 litre capacity water tanks, watering cans, wheelbarrows and spades in the

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## Message from Deputy Vice Chancellor Administration, Finance and Planning

year 2015. The University has partnered with Njokerio, Eriithia and Mwigito communities to construct two permanent footbridges at Ahero and Njokerio, respectively. In support of the current presidential initiative of achieving 15 billion trees, the university continues to plant commercial forest and fruit trees within its compound at a rate of 8000 tree seedlings annually by engaging staff and students.

Egerton University is keen to work

with the local administration to ensure that illegal encroachment of the riparian zones along the Njoro River is stopped. Therefore, handing over of the rehabilitated sites to the community on 23rd, February 2024 does not signify and of the University's engagement with the community. The University will continue supporting community initiatives where called upon as a way of fulfilling the community outreach mandate of the institution. The

University is cognizant of the fact that a large proportion of the Njoro River remains unattended and hopes that the county governments of Narok and Nakuru will through the Ward Climate Change Committees and the local Water User Associations (WRUAs) take the lead in the rehabilitation of the remaining sections of the river.

## Message from KCB Bank



Over the last 5 years Egerton University has partnered with KCB Bank to drive the conservation agenda of the river Njoro, through the consistent planting of trees that have so far seen the duo plant over 5000 trees along the Egerton catchment area. Apart from Financial support, KCB has also involved their staff and even sensitized the students, through the Mau Egerton Cross country to take part in this noble exercise.

In March this year, after a long break during the Covid-19 pandemic, Egerton University and KCB partnered once more and at the heart of the tree planting initiative dubbed #KCB Linda Miti was KCB Egerton Branch, deeply committed

to environmental sustainability anchored through KCB Group's Sustainability agenda on Climate Action. Partnering with local schools and communities, the bank had devised a unique plan to make the Cross country more than just a race—it was to a symbol of unity and a step towards a greener future.

The KCB Egerton team had meticulously chosen native tree species that would thrive in the region and contribute to the restoration of the Mau Forest, a critical ecosystem facing the threats of deforestation and climate change. The Cross country became a living testament to the power of collaboration, as participants, sponsors, and communities joined

hands in a shared mission.

KCB sponsored Kshs. 2M towards the Cross country and has done so in previous years. The Bank continues to reaffirm its commitment to supporting efforts toward mitigation and adaptation to climate change by increasing support towards climate-aligned investments and financial inflows.

Additionally, we at KCB Egerton would like to commend the University for its efforts in the conservation, rehabilitation and subsequent preservation of the catchment basin and would further motivate them to involve more stakeholders in this process,





Prof Paul Kimurto

Director, Marketing and Resource Mobilization.

# Join us for the 9th Mau-Egerton University Cross Country Event

The Egerton University Run for the Mau Cross Country has transitioned over nine years into a nationally recognized event, now integral to Athletics Kenya's calendar. The event has grown from a small University event attracting students, staff and participants from the local schools to a national event attracting upcoming athletes from the country. Beyond its athletic pursuits, the event serves dual objectives: raising environmental awareness and generating funds for

the rehabilitation of the Njoro River. Engaging participants from diverse backgrounds, including corporates and the local community underscores a collective commitment to environmental stewardship and restoration efforts. As we anticipate the 2024 edition, the Directorate of Marketing and Resource Mobilization extends heartfelt gratitude to partners, sponsors, participants, and supportive communities. Together, our efforts are instrumental in

preserving the Mau Forest Ecosystem and the Njoro River, ensuring their vitality for generations to come. Join us on Saturday, 2nd March 2024, at Egerton University Sports Grounds for the 9th Mau-Egerton University Cross Country, where athleticism converges with environmental conservation. Prof Paul Kimurto is Director Marketing and Resource Mobilization.

**EGERTON UNIVERSITY**  *Run for the Mau*

**9<sup>th</sup> Mau-Egerton University Cross-Country**

**2<sup>nd</sup> March, 2024 at the Sports Grounds**

**Registration Here:** <https://crosscountry.egerton.ac.ke/take-part>

www.egerton.ac.ke

**SPONSORS:** KENYA VISION 2030, MINISTRY OF ENVIRONMENT, ATHLETICS KENYA, NAKURU COUNTY GOVERNMENT, NAROK COUNTY, KCB BANK, COOP BANK, CIC GROUP, KENYA Forest Service, ELIB, UBERANI, TAGDev, BASED SCIENCE PARK, AGRO PARK, EGERTON UNIVERSITY ALUMNI ASSOCIATION, KCB, Kenya Red Cross, St John, njoro CANNING.

*"Transforming Lives through Quality Education"*



Prof. Charles M. M'Erimba  
Coordinator, Njoro River  
Rehabilitation Project

# The History of Njoro River Rehabilitation

In the year 2008, the Government of Kenya having recognized the threat of losing the major water towers notably the Mau Forest Complex formed a task force named "The Mau Task Force" for the purpose of conserving and restoring the Mau Complex. The team comprised of Kenya Forest Services (KFS), Kenya Wildlife Services (KWS), the Water Resource Management Authority (WRMA), now referred to as Water Resource Authority (WRA) and other key Ministries. The Taskforce's responsibility was to study and make recommendations to the government on the immediate, short and long-term options for restoring the entire Mau Forest Complex and other water towers. In the year 2009 an interim coordinating secretariat was established to coordinate the implementation of the recommendations of the Task Force and to develop a framework for long-term measures to restore and sustainably manage the Mau Forest Complex and all other water

towers. With the establishment of the Kenya Water Towers Agency (KWTA) in the year 2012, the mandate was expanded to coordinate and oversee the sustainable management of all other water towers in the country and provide a pivotal framework for the long-term sustainability of all critical natural water resources.

The idea of rehabilitating the Njoro River was conceived in the year 2011 when the then Egerton University Vice Chancellor Prof. James K. Tuitoek constituted a team lead by Prof. Charles M. M'Erimba to come up with a rehabilitation plan for the whole river and a budget. The office was created under the then Division of Research and Extension led by the late Prof. Gowland Mwangi. The team began by documenting the challenges faced by the river from upstream to downstream and shared the outcome with the University management board. The river was zoned into six (6) sections of approximately 10kms from the source to the mouth with Egerton

University adopting 25 acres at the source in Entiyani Location, Narok County and another section along its border with Eriithia, Njokerio and Ng' Ondu communities. An initial seed money of 5 million was availed to plant 100,000 tree seedlings. This was followed by a three-day workshop held on 17th, 18th and 19th of January 2012 where the then KWTA Ag. Chief Executive Officer Mr. Hassan Noor Hassan was the guest speaker.

Rehabilitation of the Njoro River which emanates in the Eastern Mau Escarpment is in line with the main objective of the Kenyan Government of achieving a clean and secure environment by year 2030. The goals for 2012 identified by the government were: (i) to increase forest cover from less than 3% at present to 4%; and (ii) to lessen by half all environment-related diseases. The origin of the river is traced in Olokurto Division, Entiyani Location in Entiyani Sub-location Narok North District at an altitude of about 2880 meters above sea level. The river drains

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Mr. Ernest Cheruyot  
Chair NJOWRUA

## Egerton and NJOWRUA Partnered to Rehabilitate Njoro River

**N**joro River watershed is located in the Eastern Mau catchment and covers an area of 420 square kilometers. The ever-increasing population and rapid changes in land use has impacted negatively on surface and ground water quality and quantity. Njoro river is the only natural waterway in this expansive area. The changes are putting strain on the declining water resources.

Njoro River water Resource Users Association (NJOWRUA), was formed in 2009 as stipulated in the Water Act as a community organization to assist Government entities in management of water

resources within the catchment.

NJOWRUA has partnered with various organizations, notably, Water Resource Authority (WRA), Egerton University, Ministry of Environment and Natural resources, Ewaso Ng'iro South Developmnet Authority (ENSDA), Water Sector Trust Fund (WSTF), Equity Bank and Worl Wide Fund for Nature (WWF), with the aim of addressing the challenges within the watershed.

The source of the river has been secured by Egerton University only on a limited scale since it is situated on a private piece of land. There is a need for the county government of Narok to acquire this land for

management since it's a common water source for the local community

The main challenge NJOWRUA faces in addressing the conservation activities within the watershed is financing. We would like in future to have other partners come on board to assist in the rehabilitation of this river because the people downstream depend on this water for their livelihood. I thank Egerton University for demonstrate that it is possible to reverse the negative effects of humans on our water courses.

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approximately 60kms through a number of farms and settlements before discharging into Lake Nakuru (1750 meters above sea level) a designated wildlife sanctuary of international importance (Ramsar site).

As the University hands over the

rehabilitated sites back to the community, I wish to thank Prof. Julius K. Kipkemboi, Prof. Afred Kibor, Dr. Stellamaris Muthoka and the late Prof. S.T. Kariuki for their invaluable time and effort put in rehabilitation process. The community support cannot go

unnoticed. I also extend my gratitude to the CO-OP Bank of Kenya, KCB, KFS and all other stakeholders who have been donating money and other resources towards this noble cause.



## Message from Chief Mukungugu Location



Joseph Ndabaru MACHARIA  
Chief Mukungugu Location

It is my pleasure and that of the entire National Government Administration Officers (N.G.A.O) of Njoro Division to express my gratitude for tireless efforts that Egerton University has done in the rehabilitation of Njoro River.

As you are all aware, the Njoro River originates from the Mau catchment and drains into Lake Nakuru. The river cuts across four locations in the division and all neighbours our university. These locations are Nessuit, Mukungugu, Njoro and Upper Piave.

The rehabilitation of the river kicked off around the year 2012 under the co-ordination of Prof. M'Erimba and other stakeholders. Consultations, collaboration partnership and enhanced teamwork between the university and the community have been adopted to achieve the objective.

The university has been working with our offices to sensitize and create awareness to members of the community now and then. The respective chiefs, assistant chiefs, elders, Nyumba Kumi and the neighbouring communities have severally been invited for workshops and seminars in the university as key stakeholders.

The university has also been organizing the "Run for Mau" cross country event annually where all stakeholders are invited to attend and participate.

In partnership with our offices, the university has been organizing outreach barazas in the locations to reach more community members more so in Nessuit, Njokerio and Beeston areas.

This resulted to the establishment of tree nurseries to the communities and a good example is the MUNESS Tree Nursery at Beeston, Mukungugu.

The rehabilitation of the river has not been an easy task all through. Farmers who neighbour the river totally believed that the riparian land was part of their lands including the river itself and therefore had full control on the same. Another serious issue was the dumping of garbage near the St. Augustine Catholic Church which has been a norm for quite some years since the county government had not established a well co-ordinated dumpsite. In my view to safeguard this very vital natural resource for now and in future the

following should be adhered to:-

1. Continuous and serious pegging of the river banks by the responsible departments in the respective farms.
2. Continuous discouragement of planting of exotic trees as they will not be viable since they will be harvested immediately for commercial and domestic purposes.
3. Above all a Njoro River Management Committee that involves all stakeholders should be on and working 24/7 in the monitoring the progress of the rehabilitation.

Finally am also happy to report to you that, tremendous achievement has been realized. In the year 2022 during the government's Kazi Mtaani Programme, the serious dumpsite at St. Augustine Catholic Church was rehabilitated. In partnership with the Njoro River rehabilitation co-ordinator Prof. M'Erimba, Diamond Hygiene Solutions and our office, we mobilized the youths to clear the dumpsite, plant indigenous trees which have really done well. The area which was being used as a meeting point by our youths for evil activities is now conducive and is a source of income. In place is a tree nursery by a group named Egerton Mau Conservers.

When there is teamwork and collaboration, wonderful things can be achieved.

## 1.0 Description of the Njoro River Catchment

The Njoro River (Fig.1) has a catchment of approximately 200km<sup>2</sup> straddling between latitude 0°15'S, 0°25'S and longitude 35°50'E, 36°5'E. It originates from the Mau Hills in Olorurto Division, Entiyani Location in Entiyani Sublocation Narok County at an altitude of about 2887 metres above sea level (m a.s.l) to about 1750 m a.s.l at the mouth where it discharges into Lake Nakuru, a Rift Valley soda lake designated as a Ramsar wetland site of international importance. The river is 55 km in length from the source to the mouth cutting across a diverse several land uses and communities with diverse cultural orientations. Little Shuru (its main tributary) joins the river at an altitude of about 2293 m. The soils in the catchment area are predominantly, volcanic clay loam. Generally, the rainfall patterns in Njoro area show a characteristic bimodal distribution, with much of the rain falling in April and August. However, this pattern could be altered as a result of climate change that was manifested between 1997 and 1998 by weather phenomenon (El Niño). This was followed by a long dry period (La Niña) between March 1999 and March 2000. The riparian population is estimated to be over 300,000 people and includes the urban centres of Njoro Town (~40,000) and much of Nakuru Municipality (~300,000). According to Lelo et al. (2005) the region has undergone rapid land use changes in the last 30 years and increased population growth with associated negative impacts to the

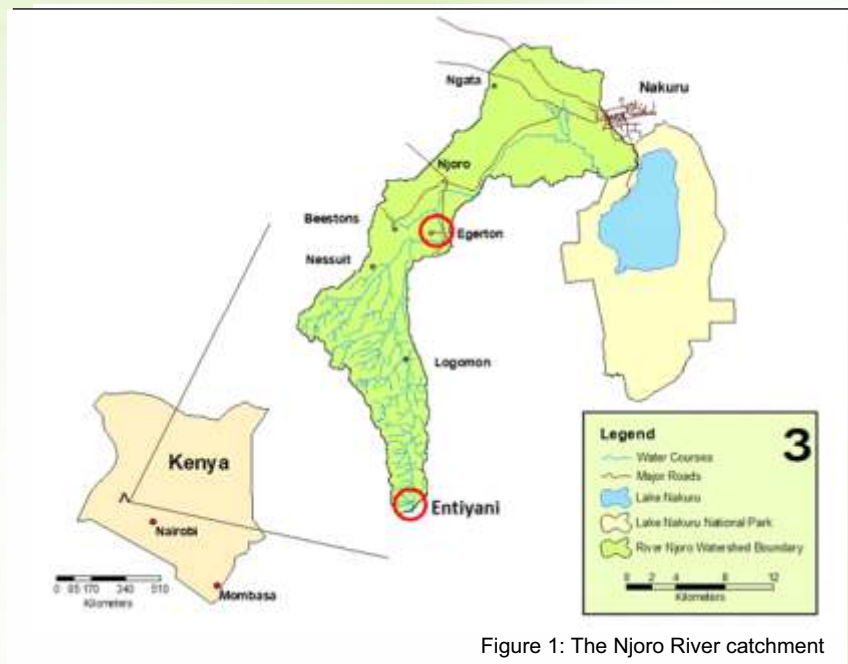


Figure 1: The Njoro River catchment

water resources, public health, economy and livelihood systems.

### 1.1 Challenges facing Njoro River

History has it that Njoro River used to be a permanent river with fish and many other aquatic organisms. The situation started changing in 1980s due to changes in climatic conditions that saw drought of 1984 hit the area coupled with wanton destruction of the Mau forest through settlements and uncontrolled deforestation. Since then the river has become seasonal, with some years (e.g. 2000) water failing to reach the lake.

Being the only major source of water for Lake Nakuru and over 600,000 people, the river is faced with a myriad of problems notably wanton destruction of indigenous riparian vegetation in the catchment and along the river banks. Due to

increasing human population and development of unplanned settlements, solid waste disposal along the river including plastics and organic matter is likely to endanger human health, deterioration of water quality as a result of organic pollution, cultivating up to the river banks and increased sediment loads due to soil erosion and subsequent deposition in Lake Nakuru. The problems if not addressed will lead to silting up of Lake Nakuru, drying up of the Njoro River and the subsequently loss of biodiversity and migration of wildlife from the Nakuru National Park as well as water problems to communities that live within the drainage basin.

### 1.2 Justification of rehabilitating the river

There is increasing concern over the need to conserve and raise awareness as to the status of natural



ecosystems, particularly in developing countries. Special concerns have been focused towards aquatic systems due to the multiplicity of their environmental goods and services critical for the optimum functioning of other environmental systems and on the human societies. Njoro River is critical for wild life in Lake Nakuru National Park as well as for communities within its drainage basin. Rehabilitating this river therefore means that Lake Nakuru will continue to support diverse fauna that act as a source of tourist attraction. There will be continued provision of clean and portable water for thousands of

people and livestock within its drainage basin. Hydrologically, the river will have enough water to recharge ground water aquifers around hence increasing the water reserves around. Ensuring permanent flow of the river means that there will be enough water for consumptive and productive uses translating to enough food for the community. Recreation and aesthetic values of the river will consequently be improved.

The main goal of the project was rest to restore the ecological status (health) of the Njoro River and make it self-sustaining as possible to minimize maintenance

requirements. The specific objectives were to stabilize the riverbanks through reforestation, improve degraded sites through fencing and dumpsite clearance, educate the community on importance of rehabilitating the river and continuously monitor the success of rehabilitation process. The project also aimed at empowering the local community to establish tree nurseries as a source of income. Sustainable harvesting of fire wood from the trees will also be improving the livelihoods of the community.

## 2.0 History of the Njoro River Rehabilitation

Efforts to rehabilitate this river started in the year 2011 with Egerton University injecting an initial fund of KSH 5million. Through the partnership with the Ministry of Agriculture (MoA) then, the river was roughly divided into six distinct zones of approximately 10 kms for ease of adoption by partners. Due to the limited financial resources to rehabilitate the whole river, the University chose to rehabilitate the source and the dumpsite at Turkana flats (staff quarters).

The first support besides the University funds was a donation by the CO-OP Bank of Kenya at a breakfast meeting in Nairobi Stanley hotel in 2012.

So far, the University has rehabilitated 7 kms of the river and

25 acres at the source. Other achievements include nineteen community sensitization seminars and workshops that have been held, construction of three community livestock watering troughs, clearance of dump sites along the river, planting of indigenous tree seedlings, community tree nursery support and water quality monitoring. The University has been mobilizing staff and students every year in the last ten years in planting 100,000 tree seedlings both at the source, along the river and within the University. The challenges have been however, limited funding to rehabilitate the whole river and for sustaining rehabilitated sites leading to tree survival rate of about 80%. Others include uncontrolled dumping of wastes, negligence in enforcement of

environmental laws, conflicting laws on riparian boundaries, low adaption of solid waste management methods, low adoption of the concept by the community and uncoordinated rehabilitation by other interested parties.

For the river to recover fully from degradation, it calls for the concerted effort by all stakeholders from the county Environmental Management Authority (NEMA), Water Resource Management Authority (WARMA), industries, institutions, local administration, local authority, Kenya Wild Life Services (KWS) Nakuru and Community members.



### 3.0 Success and Challenges of Rehabilitating the Njoro River

In the heart of Njoro sub-county, Egerton University has been leading the charge in transforming the landscape next to St. Augustine Catholic Church. The site, once an illegal dumpsite, posed a significant threat to the Njoro River, with pollution seeping into its waters. The ambitious rehabilitation project, initiated in 2012 through a collaboration between the local University and the community, has not only seen the removal of solid waste but also fostered a thriving ecosystem.

The dumpsite's transformation embraced a "shamba" system, where the local community took on the responsibility of nurturing trees and cultivating local produce like maize and beans. Over 10,000 tree seedlings have flourished in the area, breathing new life into what was once an environmental hazard. However, maintaining the forested area has not been without its challenges, primarily the cutting of trees for firewood. Thanks to local administration intervention, this destructive practice has been curtailed, paving the way for sustained reforestation efforts.

Paul Koech who has been a caretaker at a section of the rehabilitated site, emphasized the potential for further rehabilitation by expanding tree planting efforts along other sections of the river. Additionally, he suggested the introduction of beekeeping practices, a move that would not only contribute to the ecosystem's health but also provide a sustainable livelihood for the local community.

In a different section of the dumpsite, Gilbert Nyoro, through Diamond Hygiene Solutions, has

partnered with the County Government of Nakuru to establish a tree nursery. Alongside raising awareness on solid waste management and river rehabilitation, their efforts have borne fruit. However, challenges persist, including occasional dumping, insufficient water storage for the nursery, and inadequate fencing to deter animals.

Despite these obstacles, there is optimism that Egerton University can play a more significant role in fostering environmental awareness. By intensifying community sensitization efforts, supporting tree-growing initiatives, and addressing infrastructure needs, the university can contribute to the sustained success of Njoro River's rehabilitation.

At the source of Njoro River in

Entiyani Location, rehabilitation efforts since 2012 have seen the planting of over 50,000 tree seedlings across six acres. However, challenges persist, ranging from local communities cutting down trees for firewood to encroachment, accidental fires, and siltation of water troughs built by the University.

The successes and challenges in Njoro River's rehabilitation reflect a shared commitment between local communities, businesses, and educational institutions. While significant strides have been made, continuous collaboration and innovation are crucial to overcoming the hurdles that threaten the sustainability of these vital environmental initiatives.

**Author: Agnes Mwangi**



**Wilson Nchoe**  
Chief - Entiyani Location



### 3.1 The source of the river at Entiyani location

The source of Njoro River is in Olokurto Division, Entiyani Location in Entiyani Sublocation Narok County at an altitude of 2887m.a.s.l

(S00°34.588'; E035° 54.684'). Rehabilitation activities entailed fencing of the site, planting of indigenous tree seedling, construction of watering troughs and hiring of a community caretaker.

Before the site was rehabilitated it used to be frequented by livestock and other domestic animals that posed danger of zoonotic diseases and water contamination. Below are the photos before and after rehabilitation members.



Entiyani Site before rehabilitation in 2012



Entiyani Site after rehabilitation in 2023

In the year 2015, the site was razed down as a result of an accidental fire that came from a

new farm. The efforts of rehabilitation were later resumed the following year in 2016.

Below are some of the photos taken during that time.



Entiyani site in 2015 after the fire incident that destroyed the vegetation



Below are some of the photos taken last year 2023. Notice that the water at the source comes as a spring from the rock that flows down stream and then other tributaries join in Logoman forest.



Njoro River source at Entiyani in the year 2023

### 3.2 Ng' Ondu site at St. Augustine and opposite Turkana flats

This site is next to the Egerton University staff quarters, the Turkana flats, hence the name. The site was highly degraded with two huge dumpsites, one near a community residential market in Njokerio and another between St. Augustine

Catholic Church and Egerton University. It is at this site that animals and vehicles were driven directly into the river.

Rehabilitation activities at this site included, construction of a livestock watering trough, fencing of the site, clearing the dumpsites and planting of indigenous tree seedlings. The university has employed a caretaker

at this site from the community. Currently, a youth group has taken over the rehabilitated site and established a tree nursery with a capacity of 100,000 tree seedlings. Below are some photos depicting how the site was in before rehabilitation in the year 2012 and how it was last year (2023).



Ng' Ondu Site before rehabilitation in 2012





**Ng'onde Site after rehabilitation in 2023**

### **3.3 Conservation of the Njoro River Calls for a Balance Between Socio-economics and Environmental Approach: A Case of the STEM Project**

Egerton University, in partnership with the University of Natural Resources and Life Sciences (BOKU-Austria), Kyambogo University (Uganda) and Africa Center for Technology Studies (ACTS-Kenya), launched *Strengthening community-based research for river health and climate change mitigation in Eastern Africa (STREM)* project from 2020 -2023. The objectives of the project were to improve existing knowledge on rivers via conceptual modelling on the socio-economic and ecological impact on the rivers, to enhance the skills and capacity for research and management of rivers through case studies, to contribute to management frameworks and alternatives for rivers via community-based management, and contribute to knowledge development, dissemination and synthesis in Kenya and Uganda through knowledge integration. The project was funded by Austrian Federal Ministry of Education, Science and Research through Africa-UniNet. Professor Nzula Kitaka (Egerton University), Dr Joel Onyango and Ms. Maureen Kabasa (ACTS) lead the Kenyan team to

gather data for River Njoro; physical, chemical and biomonitoring characteristics of water quality coupled with Socio-economic data collection through interviews and T-Labs workshops approaches. Other Scientists involved in the STREM project were Dr. Grace Asiyo Ssanyu (Principal Investigator), Dr. Norah Mutekanga both from Kyambogo University, Professor Andreas Melcher, Dr. Gabi Slezak and Mr. Andreas Bauer of BOKU.

River Njoro in Kenya and River Mayanja in Uganda were selected as the Case Studies of the project. During the project period, water quality data was collected in the both rivers. DPSIR (drivers, pressures, states, impacts, and responses) which is a causal framework used to describe the interactions between society and the environment was used to integrate collected and literature information. DIPSIR is a crucial tool as it seeks to analyze and assess environmental problems by bringing together various scientific disciplines, environmental managers, and stakeholders, to seek for solutions by identifying the direct and indirect drivers of change, pressures, states, impacts, and responses. From the results obtained its clear that for rivers to be protected for future generation there needs to balance between

socio-economics and environmental conservation. Society needs to be at the forefront of advocacy, management and rehabilitation of rivers if the rivers will provide clean water and healthy system in future. Sound and proper policies and collaboration among stakeholders are key to unlocking strategies and balance.

For knowledge cocreation, two workshops (fact finding, validation and knowledge dissemination) were held at Egerton University for the river Njoro (October 2022 & December 2023), where stakeholders (from upstream to downstream) were engaged to acknowledge current challenges of the river Njoro, identify their roles, and come up with an action plan toward improving the river system. In addition, a four-day research-based online training for Students, researchers and practitioners was undertaken between 20-24<sup>th</sup> February 2023, where 40 participants were trained on "Community -Based Research for River Health". Several outputs are being developed, among them a policy brief, technical paper on "*Community involvement in river health management: Lessons learnt from Rivers Mayanja and Njoro catchments, East Africa*" and several scientific papers.

**Author: Prof. Nzula Kitaka**



### 3.4 Adopt a Forest Initiative

In the last three years the Vice Chancellor Prof. Isaac O. Kibwage initiated an ambitious project of belting the boundaries of Egerton

University with trees. This project was supported by the National Government through the Office of Prime Cabinet Secretary Hon.

Musalia Mudavadi, who participated in a tree planting exercise in 2023.



Planting of bamboo trees in 2014



2023 forest showing mature bamboo trees

As part of its contribution to the campaign against climate change and mitigating the effects, the university has been planting on average 10,000 tree seedlings

in the last 12 years. This has been made possible by engaging staff and students. An estimated 100,000 tree seedlings have been planted within the university. A tree

nursery with a capacity of 100,000 tree seedlings has also been established and managed by the Department of Natural resources.

**Below is a pictorial highlighting the tree planting activities.**



Prime CS Musalia Mudavadi Launches Egerton University's 'Adopt a Forest' Initiative spearheaded by the Vice Chancellor Prof. Isaac O. Kibwage





Egerton University Vice Chancellor, Prof. Isaac Kibwage leads staff and students during the National Tree Growing Day on 13th November 2023 at Main Campus in Njoro.



## Tree at the V.I.P. Acre



The Principal Secretary for Performance and Delivery Management Veronica M. Nduva and Vice Chancellor Prof. Isaac O. Kibwage during a tree planting exercise on 20th April 2023 at Main Campus Njoro



A section of the VIP Acre at Main Campus in Njoro established in April 2023 with 300 tree seedlings planted so far.



Egerton Community pose for a group photo with the Vice Chancellor Prof. Isaac O. Kibwage during the National Tree Growing Day on 13th November, 2023.



## Community Support Initiatives Pictorials



Community receiving donations in support of establishing tree nurseries (a) at St. Lwanga primary school and (B) at Likia environmental CBO by the CO-OP Bank team



Community youth replanting tree seedlings at the Ng'ondeu Site in 2015

The university has held 30 plus community environmental sensitization seminars and partners meetings. Primary school

pupils were also given opportunities to participate in the Nakuru Agricultural shows as part of environmental awareness creation.

Every year, the university holds Mau-Egerton Cross country to mobilize for funds for rehabilitation and also create environmental awareness.



Nessuit primary school pupils explaining how conservation of Njoro River should be done in one of the Nakuru Agricultural shows sponsored by Egerton University. Looking on are from left, teacher Florence, Prof. R. Mwonya and CEC Environment, Nakuru County Hon. Richard Rop in 2014





Nessuit primary school pupils demonstrating how they would like the Njoro River to look like in the future.



Community environmental sensitization seminars conducted in the year 2012



Egerton University staff educating the community at Entiyani on the importance of environmental conservation in the year 2013





Participants during the inaugural Mau-Egerton University Cross Country on February 2014



Participants during the 8th Edition of the Mau-Egerton University Cross Country on February 2023

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