The Haller Foundation

*Kikambala Resilience Initiative*

# BASELINE SURVEY

## 2026



Written By

*James Konde &*
*Chloe Ford-Welman*

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# Table of Contents


| | |
|---|---|
| Acknowledgements | 2 |
| Acronyms | 3 |
| Executive Summary | 4 |
| Background | 5 |
| Methodology | 6 |
| Findings | 9 |
| Household Demographics | 11 |
| Water & Sanitation | 13 |
| Food Security | 17 |
| Agriculture & Land Use | 19 |
| Environment & Natural Resources | 21 |
| Income | 23 |
| Interpretation of Findings | 27 |
| Key Considerations | 30 |
| Recommendations | 31 |
| Conclusion | 32 |

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The Foundation also acknowledges the dedication of the field enumerators, technical staff, and programme teams whose efforts contributed to the successful implementation of the survey and preparation of this report.

We would also like to extend our sincere thanks to Matthew Sleap for generously volunteering his time to review the report and provide valuable technical input.



*Kikambala Farmer & Homestead*

His interviews with the field team offered additional insight and perspective, helping to strengthen the analysis and recommendations presented throughout the report.

The findings presented in this report provide an evidence base to inform programme design, establish benchmark indicators for future monitoring and evaluation, and support community-centred interventions aimed at strengthening resilience, livelihoods, and environmental sustainability.

The views expressed in this report are those of the authors and do not necessarily reflect those of The Regen Trust or the Government of Kenya.



*Community Sensitisation in Kikambala*

# Acronyms

| | |
|---|---|
| **CBO** | Community Based Organisation |
| **HH** | Household |
| **HF** | Haller Foundation |
| **NGO** | Non-Govermental Organisation |
| **WASH** | Water, Sanitation & Hygiene |
| **MOA** | Ministry of Agriculture |
| **VSLA** | Village Savings & Loan Association |
| **ICT** | Information & Communication Technology |
| **ODF** | Open Defecation Free |
| **KES** | Kenyan Shillings |
| **EZP** | Export Processing Zone |

# Background

Funded by The Regen Trust, the Kikambala Resilience Initiative aims to transform community livelihoods through innovative, integrated energy, water, and livelihood solutions that strengthen resilience to climate and environmental challenges.

To inform the programme's design, implementation, and future monitoring and evaluation, Haller Foundation conducted a baseline household survey in Kikambala, Kilifi County, establishing a robust evidence base against which future progress and impact can be measured.

# Purpose

The survey was designed to assess household livelihoods, food security, agricultural production systems, water, sanitation and hygiene conditions, environmental conservation practices, awareness of digital agricultural services, and broader community resilience indicators.

The assessment sought to understand the socio-economic, agricultural, environmental, health, and digital inclusion conditions of target communities prior to programme implementation.

# Executive Summary

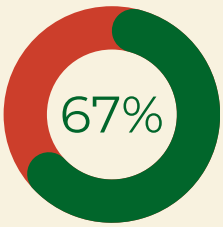
**The assessment identified multiple interconnected challenges affecting household resilience, including water insecurity, low agricultural productivity, climate variability, environmental degradation, and limited livelihood opportunities.**

Agriculture remains central to household livelihoods but is predominantly subsistence-based, seasonal, and highly dependent on rainfall. Access to water continues to place significant pressure on households, particularly on women and children, who are primarily responsible for water collection.

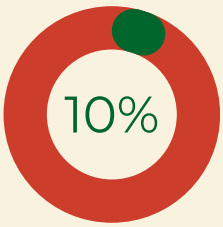
Despite these challenges, communities demonstrate important strengths including strong engagement in farming, active participation in informal savings groups, existing environmental conservation practices, and willingness to adopt new agricultural knowledge and technologies. The findings suggest significant opportunities for integrated interventions focused on climate-smart agriculture, water security, agroforestry, livelihood development, sustainable energy solutions and digital agricultural extension services.

## Key Baseline Indicators

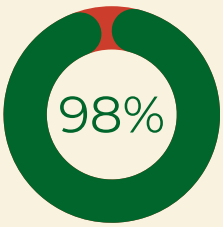
*The figures below show the baseline values for some of the project's key indicators, with the green sections representing the percentage recorded at baseline.*



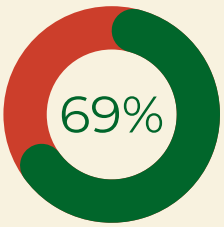

**Female**




**Harvesting Water**




**With Makeshift Toilets**



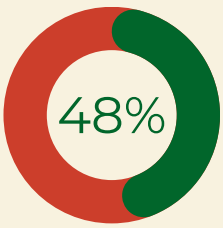

**Using Firewood as Cooking Fuel**



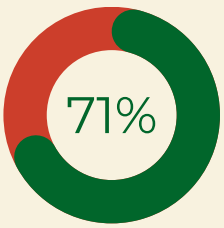

**Seasonally Farming**




**Affected by Soil Erosion**




**With access to Electricity**




**Monthly Income <10,000 KES**

# Background

## About Haller

Haller Foundation works with nature to restore degraded landscapes and strengthen the resilience of vulnerable communities through sustainable livelihood solutions.

The Foundation's integrated approach combines environmental restoration, agricultural development, water security, community health, and economic empowerment to improve long-term well-being and resilience.

**Programme areas include:**

- **Water security**
- **Sustainable agriculture**
- **Environmental conservation**
- **Livelihood development**
- **Community health and wellbeing**
- **Digital agricultural extension**

## Kikambala Community Context

Kikambala is located within Kilifi County along Kenya's coastal region. Communities in the area depend heavily on small-scale agriculture, livestock keeping, casual labour, and informal businesses.

The area faces a range of interconnected challenges that prevent the communities of Kikambala from reaching their full potential, limiting economic opportunities, food security, environmental resilience, and overall well-being.

**Challenges include:**

- **Climate variability**
- **Water scarcity & affordability**
- **Low agricultural productivity**
- **Limited livelihood opportunities**
- **Environmental degradation**
- **Rapid urbanisation**

This assessment was undertaken to establish baseline indicators and inform future programme implementation.

# Methodology

## Survey Design & Data Collection

The assessment employed a structured household baseline survey method by Haller's trained enumerator and agricultural officer, James Konde - to assess various factors, including Household demographics, Education, Livelihoods & Agriculture, Water and Sanitation, Household income, Environmental conservation, Health and Nutrition & Awareness of the Haller Farmers App.

A total of five visits were conducted in the Kikambala area to gather data, which was collected digitally through the Solstice.World platform.

## Target Communities & Location

The survey covered household clusters from Kikambala including:

- Bodoi
- Mamba
- Mawamba
- Tuinuane
- Humanyane
- Kadzengo

The target communities are located within the broader, underdeveloped Kikambala area, approximately 20 miles north of Mombasa and set back from the A7 Malindi Road. This area should not be confused with the more urbanised Kikambala Town, which lies further north along the coast.

The project area is situated adjacent to the Nile Crocodile facility, providing Haller with convenient access for project implementation, ongoing monitoring, and technical support.

The wider Kikambala settlement extends over approximately 1.6 km from east to west and 3.2 km from north to south.

Settlement is concentrated along a network of established unmade roads, with a higher density of housing in the south-eastern section of the area.

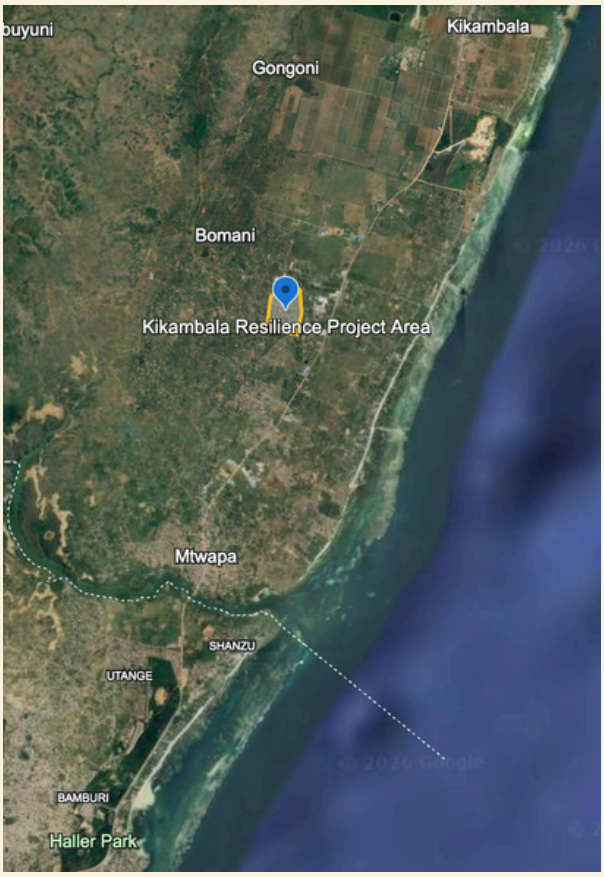
In contrast, in the north-western section there is a open grassland which is largely uncultivated, presenting opportunities for future environmental restoration and agricultural development.



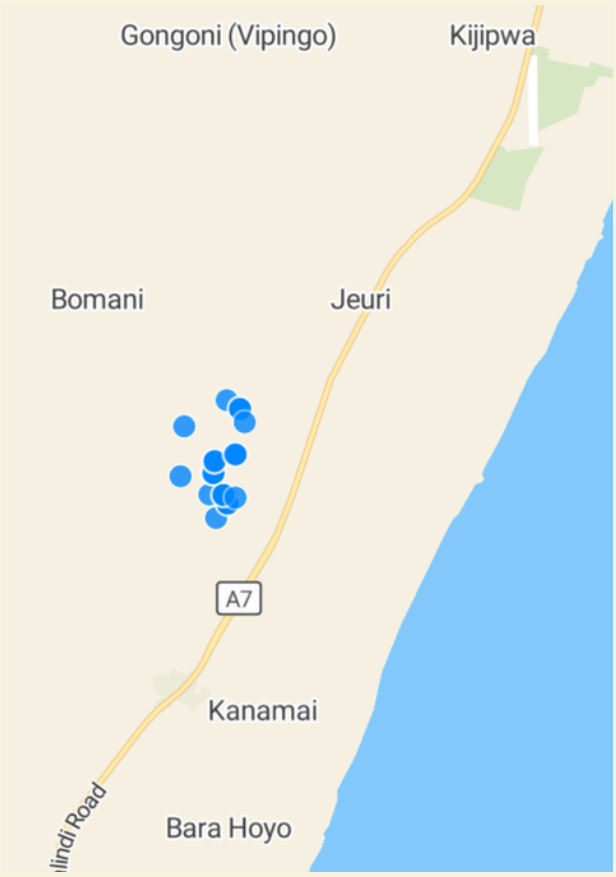
# Sample Size

A total of 60 households participated in the survey, representing between 350–400 individuals. Respondents ranged in age from 25 to 75 years, with most respondents between 35 and 60 years of age.

Based on GPS coordinates (3°53'10.86"S 39°45'53.53"E) collected during the survey, the data collection area covered approximately 103 hectares (1.03 km²), which is broadly consistent with the planned project boundary.




*Map showing Kikambala Project Area, in relation to Haller Park & Kikambala Town*




*Data Collection Points in Kikambala Project Area*

# Survey Limitations

This assessment provides a valuable snapshot of household conditions at the time of data collection. Findings should be interpreted within the context of the survey sample size and are intended to identify key trends, challenges, and opportunities rather than provide statistically representative findings for the wider population.

Results are based primarily on Haller field staff's observations, conversations with residents, and data collected through farmer surveys and should therefore be considered alongside ongoing monitoring and community engagement activities.

# Community Engagement & Field Context

The assessment highlighted the importance of community sensitisation and trust-building prior to data collection.

Some respondents expressed concerns regarding the purpose of the survey, particularly given ongoing political activity with elections expected to take place next year and sensitivities surrounding land ownership in Kilifi County. In a small number of cases, these concerns initially affected willingness to participate or share information, especially among young people, who were often more reluctant to engage in the process.

Engagement with local leaders and the government administration was therefore essential to educate the community about Haller's work and in communicating the objectives of the assessment, addressing misconceptions, and reassuring community members about how the data would be used. These efforts helped to build trust, improve transparency, and support broad participation throughout the baseline survey process, contributing to the quality and reliability of the data collected. Efforts to continue to build community confidence and trust, will be ongoing throughout the project cycle and thereafter to maintain active participation.

# Community Strengths & Opportunities

While the assessment identified significant development challenges, it also highlighted important community assets that provide a strong foundation for future interventions. The findings demonstrate that the community possesses a strong willingness to engage in sustainable development initiatives and has existing structures that can support long-term programme delivery.

Building on these strengths will be essential to ensuring community ownership, increasing the uptake of project activities, and maximising the sustainability of project outcomes.

These include:

- Strong engagement in farming and food production
- Existing environmental conservation practices
- High participation in community savings initiatives
- Strong involvement of women in livelihood activities
- Interest in agricultural training and knowledge sharing
- Positive attitudes towards digital agricultural services
- Active local leadership structures and community-based organisations

# Findings

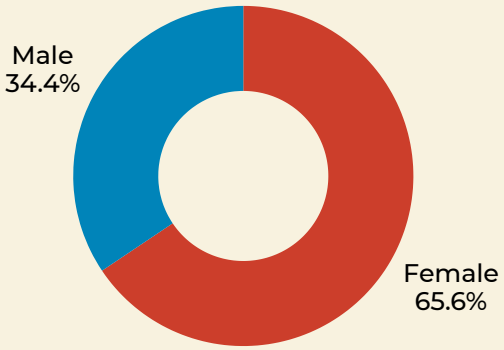
## Household Composition & Structure

Women accounted for 65.6% of survey respondents, while men represented 34.4%.

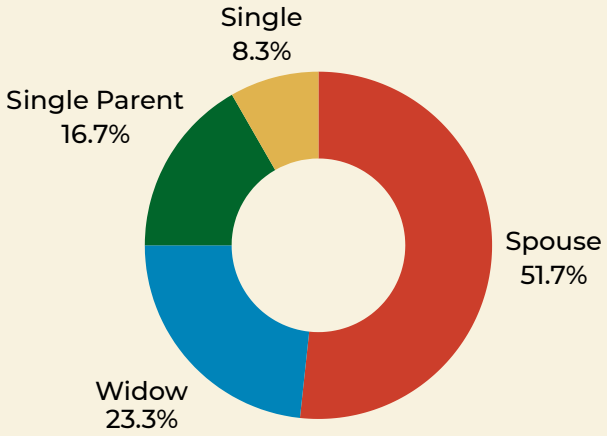
The higher participation of women reflects their central role in household management, agricultural production, and community activities. Men, meanwhile, are often engaged in informal labour opportunities in the more urbanised areas of Kikambala or the factories located on the nearby Malindi road, which may have limited their participation in the survey.

Field observations indicated that women carry significant responsibility for household food production, childcare, water collection, and small-scale income-generating activities. Many women interviewed were engaged in informal businesses such as selling roasted groundnuts, fried fish, vegetables, and other household products alongside managing farming activities.

### *Gender Distribution*




### *Marital Status*




The majority of respondents were married, although widowed individuals, single parents, and unmarried adults were also represented. A notable proportion of households were female-headed, reflecting broader social and economic challenges within the area. Despite these constraints, many female-headed households demonstrated strong levels of resilience and leadership in sustaining household livelihoods.

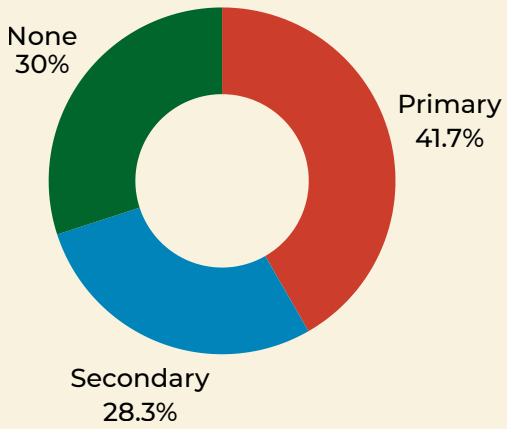
Nearly three-quarters of households (70.5%) reported having between two and ten children, reflecting relatively large household sizes and a substantial dependency burden. These household dynamics highlight the importance of family labour and agricultural production in supporting livelihoods and household income generation.

# Education

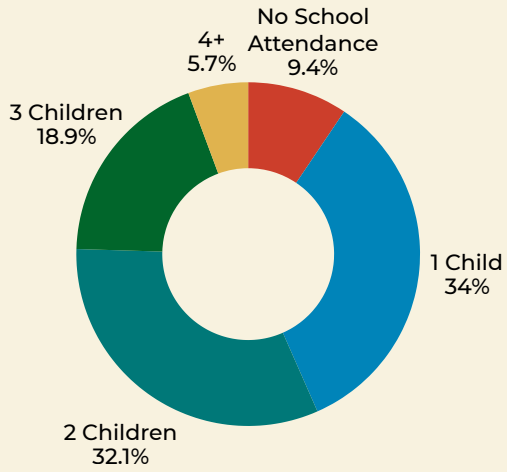
Educational attainment among respondents was largely concentrated at the primary and secondary school levels, with relatively few individuals reporting completion of tertiary education. This suggests that while access to basic education is relatively widespread, progression to higher levels of learning remains limited.

Most households reported having between one and three children currently attending school, demonstrating a strong commitment to education despite challenging circumstances. However, community discussions indicated that school attendance can be irregular, with not all children attending, particularly when households face financial difficulties that limit their ability to meet school-related costs.

*Level of Education (Respondent)*




*Youth School Attendance*




Financial constraints were consistently identified as the main barrier to education. Costs associated with school fees, uniforms, learning materials, and transport place significant pressure on household budgets. Participants also cited social factors, including peer pressure and school drop-outs among adolescents, as challenges affecting continued attendance.

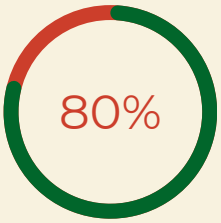
Overall, the findings suggest that poverty remains a major constraint to education, limiting opportunities for equal and quality education, vocational training, and skills development. Addressing both financial and social barriers to education will be important for improving future livelihood opportunities, particularly for young people.

# Household Conditions & Land Tenure

78% of respondents reported living in self-built or inherited homes located on family-owned land, while others lived in rented accommodation or informally as squatters.  While tenure is based on long-term occupancy, land reform under review may confirm the freehold legitimacy for these settlements in the short-term.

Housing structures were predominantly semi-permanent, with iron-sheet roofing being the most common (80%) roofing material. Traditional makuti (thatched) roofing was found in just 20% of households. Made from coconut palm leaves, this roofing material is gradually being phased out as prolonged drought has reduced coconut cultivation and the availability of makuti.

The widespread use of iron-sheet roofs presents an opportunity for future rainwater harvesting interventions, particularly given the area's ongoing water access challenges.




*Households with Iron-Sheet Roofs*



*Makuti & Ironsheet Household Roofs*

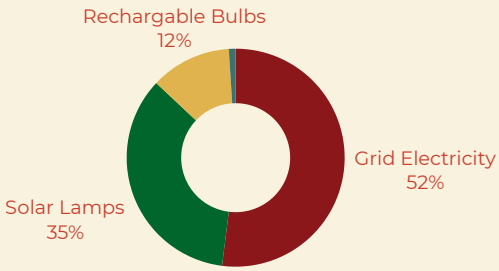
## Homesteads with access to electricity




Access to electricity remains uneven across the surveyed communities and is largely influenced by proximity to existing grid infrastructure. Although electricity is available, high connection and usage costs limit access, with many households relying on small privately owned solar panels for lighting, charging mobile phones, and powering radios or televisions.

The increasing uptake of off-grid solar solutions through providers such as M-KOPA and d.light demonstrates growing demand for affordable, reliable energy. Expanding access to renewable energy could improve digital connectivity, enable household water purification, support more efficient cooking technologies, and reduce reliance on firewood, contributing to improved health, livelihoods, and environmental sustainability.

# Main Sources of Household Lighting

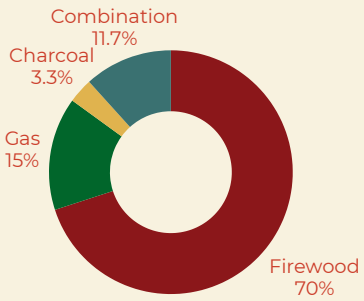



Lighting sources closely reflected levels of electricity access. Households connected to the grid predominantly relied on electricity for lighting, while those without electricity used alternative sources such as basic solar lighting systems, rechargeable bulbs, and lanterns.

Solar lighting was the most common alternative energy source, suggesting that households have adopted off-grid solutions to meet basic lighting needs. The relatively high use of solar lighting demonstrates both the potential and necessity of renewable energy technologies in areas where grid connectivity remains limited.

Expanding access to affordable and reliable electricity has the potential to improve household wellbeing, support income-generating activities, enhance educational opportunities through better lighting for studying, and reduce dependence on less reliable lighting alternatives. An advanced community solar kiosk will also enable households to store electricity for later use, improving the reliability and availability of power when it is needed most.

# Main Sources of Cooking Fuel




Firewood remains the dominant cooking fuel, used by 70% of surveyed households, followed by charcoal and liquefied petroleum gas (LPG).

The continued dependence on firewood as fuel places pressure on local natural resources and can contribute to household health risks associated with prolonged exposure to indoor smoke.

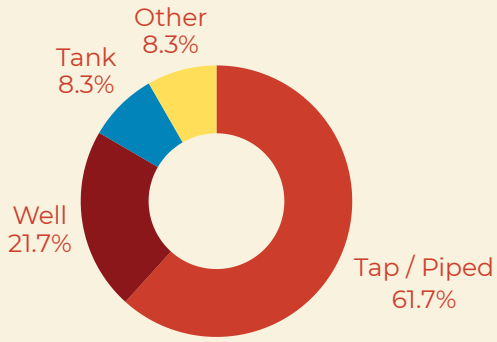
The findings highlight a clear opportunity to promote more sustainable and efficient cooking technologies within the community. Transitioning to improved cookstoves and alternative cooking fuels could reduce household expenditure on fuel, improve health outcomes by lowering exposure to harmful indoor air pollution, and decrease pressure on surrounding natural resources by reducing the demand for firewood and charcoal. Over time, this could contribute to improved environmental sustainability while strengthening household resilience and wellbeing.

# Water, Sanitation & Hygiene

## Water Access & Availability

Water access emerged as one of the most significant challenges affecting surveyed households. While water sources exist within the wider area, many respondents reported travelling between two and five kilometres to collect water for domestic use.

*Main Water Point*




Responsibility for water collection often falls primarily on women and children, creating substantial demands on household time and labour. It was found that during periods of drought, water scarcity becomes more pronounced, with 83% of households experiencing acute scarcity, reducing household use and rationing at source.

The majority of households rely on piped water, communal water points, and wells where available. However, the piped water is often unsafe for consumption because it is supplied by private donors and is not regularly tested for water quality. Meanwhile, water available from small groundwater pumps is brackish and susceptible to contaminiation so it is only used for washing, bathing and watering crops. Furthermore, theft and vandalism were identified as significant barriers to water access in Kikambala. Many existing water points had been damaged, with essential infrastructure such as taps & pumps stolen, reducing the functionality and reliability of these water sources.



*Community Well*




*Vandalised Water Source*

# Rainwater Harvesting

*HH practising rainwater harvesting*

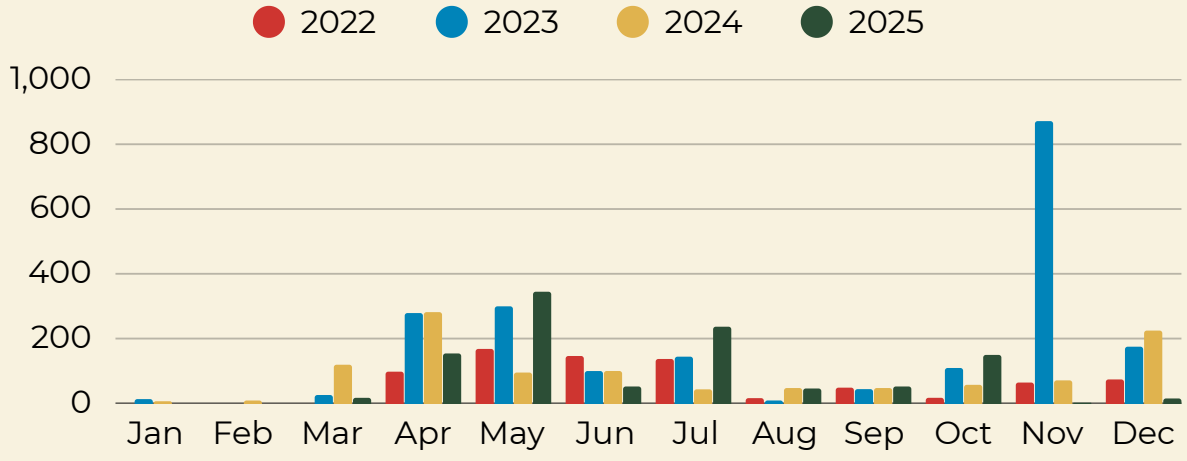
10%

Household rainwater harvesting remains uncommon, with 90% of respondents reporting that they do not currently harvest rainwater despite its significant potential to improve household water security.

Historical rainfall data indicates an average annual rainfall of approximately 1,272 mm; however, more recent Haller records (2022–2025) show increasingly pronounced year-to-year variability, reflecting less predictable rainfall patterns. Combined with high evaporation rates, these conditions reduce the effectiveness of traditional open water storage systems while highlighting the importance of capturing rainfall during wetter periods, including years influenced by El Niño, which last took place between 2023-2024.

Expanding access to underground rainwater harvesting systems would provide a practical and climate-resilient solution by reducing households' reliance on communal water points, many of which are vulnerable to theft, vandalism, and periods of reduced functionality. Unlike open storage systems, underground tanks minimise evaporation losses, reduce the risk of contamination and mosquito breeding, and enable households to safely store rainwater over extended periods.

By capturing and storing rainwater during the rainy season, these systems could strengthen resilience to seasonal water shortages, improve the reliability of household water supplies, reduce the time and cost associated with collecting water, and provide an additional source of water for small-scale irrigation and household food production. When combined with Haller's proven water conservation techniques, they have the potential to significantly enhance agricultural productivity and long-term community resilience.



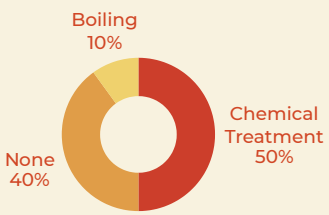

*Nguuni Reception Rain Gauge - Annual Rainfall 2022-2025*

# Water Quality

Water treatment practices were found to be inconsistent, with 40% of households reporting that they regularly consume untreated water. Purified water is limited to only boiling and chemical treatment. Routine water quality testing is also uncommon, increasing the risk of exposure to waterborne diseases and limiting awareness of potential contamination.

Respondents identified diarrhoea and typhoid as recurring health concerns within the community, highlighting the close relationship between water quality, sanitation, and household health outcomes. These illnesses not only affect individual wellbeing but can also reduce productivity, increase healthcare costs, and place additional pressure on already vulnerable households.

These findings demonstrate a clear need to improve access to safe drinking water through a combination of community sensitisation on household water treatment, safe water storage, and good hygiene practices, alongside the installation of appropriate water purification systems powered by solar. Together, these interventions would help reduce the incidence of waterborne disease, improve overall community health, and strengthen household resilience.



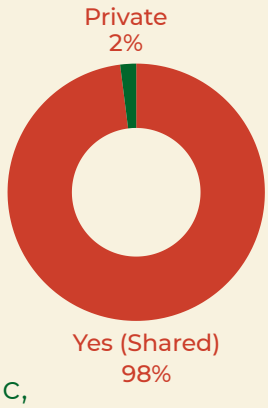

*How HH make water safe for use*



*Damaged Water Pump - still actively used by the communities despite stolen hardware*

# Access to Sanitation Facilities

*HH with access to toilet facilities*




Reported access to sanitation facilities was high, with 98% of respondents stating that their household had access to a toilet. However, field observations highlighted significant concerns regarding the quality, durability, and safety of existing sanitation infrastructure.

While 88% of respondents reported that their households were open defecation free (ODF), many of the toilet facilities observed were basic, makeshift pit latrines that offer only limited improvements over open defecation in terms of safety, environmental protection, and public health.

Many of these pit latrines were poorly constructed and vulnerable to collapse, particularly during periods of heavy rainfall. During the assessment, two pit latrines had collapsed, demonstrating the significant health, safety, and environmental risks associated with the current sanitation infrastructure. Inadequate containment of human waste also increases the risk of soil and groundwater contamination, particularly where water sources are located nearby.

These findings reinforce the need for continued community sensitisation on the health and environmental risks associated with inadequate sanitation, while promoting good hygiene practices and encouraging the construction and use of safe, durable, and improved toilet facilities.



*Collapsed makeshift pit latrine*

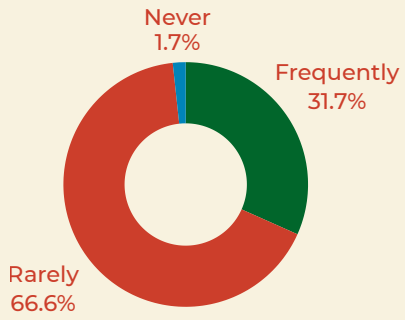
# Hygiene Practicies

Although awareness of good hygiene practices exists, adoption remains inconsistent. Many households lacked dedicated handwashing stations equipped with both soap and water adjacent to the shared sanitation facilities, increasing the risk of disease transmission.

In addition, limited drainage infrastructure contributes to the accumulation of stagnant water around households, creating favourable breeding conditions for mosquitoes and increasing the risk of Malaria and other water-borne diseases.

These findings suggest that improvements in water access, climate-resilient sanitation infrastructure, and sustained hygiene promotion and community sensitisation will be important components of strengthening public health, reducing environmental risks, and building long-term community resilience.

***HH with soap and water near toilet facilities***






*Shared makeshift toilet facility*

# Livelihoods & Food Security

## Food Security and Farming Practices

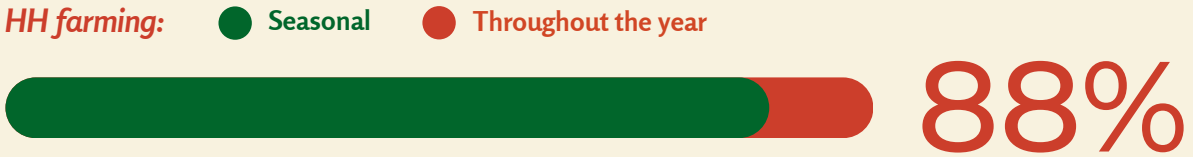
Rain-fed agriculture remains the foundation of household livelihoods in Kikambala, with 90% of households relying on farming to meet their household consumption needs. However, farming systems are predominantly subsistence-based, with 88% of respondents heavily dependent on seasonal rainfall, making agricultural production highly vulnerable to climate variability and prolonged dry periods. As a result, many households are forced to rely on alternative sources of income or food during periods of low agricultural productivity, placing additional pressure on already limited household incomes.

Land availability is also highly limited, with many households cultivating plots of less than one acre. The small size of these plots restricts production potential and limits opportunities for commercial agriculture. In addition, respondents consistently identified poor soil fertility and unreliable access to water as major constraints to agricultural productivity. These learnings will shape the project's focus on small-scale kitchen gardening, enabling households to produce as much food as possible in small, space-constrained areas.

The most commonly grown crops included maize, cassava, cowpeas, amaranth, okra, and sweet potatoes. These crops are easy to grow and generally well-suited to local conditions and play an important role in household food security. However, production is often insufficient to generate consistent surpluses for sale.

Livestock ownership was common, particularly chickens, goats, and ducks. Livestock are primarily kept for household consumption, emergency income needs, and as a form of household asset rather than for commercial production.

The need to support farmers in Kikambala to transition beyond subsistence farming is evident and will form a core component of Haller's intervention. By strengthening farmers' knowledge, skills, and access to appropriate technologies and resources, the programme will aim to improve agricultural productivity, increase household incomes, and build long-term resilience to climate and economic shocks.



# Agricultural Knowledge and Training Needs




Most respondents reported using basic farming practices and expressed a strong interest in improving their agricultural knowledge. Farmers identified water shortages, poor soil quality, pests and diseases, and declining yields as their most significant challenges. However, many of these issues are exacerbated by limited access to training and agricultural knowledge, leaving farmers unaware of practical solutions and sustainable farming techniques that could help address these constraints and improve productivity.

Agricultural knowledge is acquired through a variety of sources, including radio programmes, television, farmer to farmer community networks, and occasional training opportunities. However, access to ongoing agricultural extension support remains limited.

Encouragingly, respondents demonstrated a willingness to adopt improved farming practices and digital learning tools if appropriate training and support are made available.

This represents an important opportunity to strengthen climate resilience, improve productivity, and support long-term food security.



*Kikambala HH Poultry Coop*

# Environmental Conservation

## Soil Erosion & Land Management

Environmental degradation was identified as a significant concern among surveyed households. A substantial majority of respondents (92%) reported experiencing soil erosion on their farms, highlighting the vulnerability of local agricultural systems to land degradation and climatic pressures.

Despite these challenges, many households have already adopted practical conservation measures. Common approaches included tree planting, mulching, terracing, and the use of cover crops to reduce soil loss and improve soil health.

The adoption of these practices suggests a strong level of environmental awareness within the community and a recognition of the importance of sustainable land management.

These findings reinforce the relevance of Haller's regenerative agriculture training approach, developed over more than 60 years at the Haller Demonstration Farm. By promoting soil restoration techniques alongside small-scale kitchen gardening, the project will build on existing community knowledge to improve soil health, strengthen household food security and enhance resilience to climate change.

*HH aware of soil erosion on plots* 92%



*Clearing the land in Kikambala*

# Tree Planting & Agroforestry

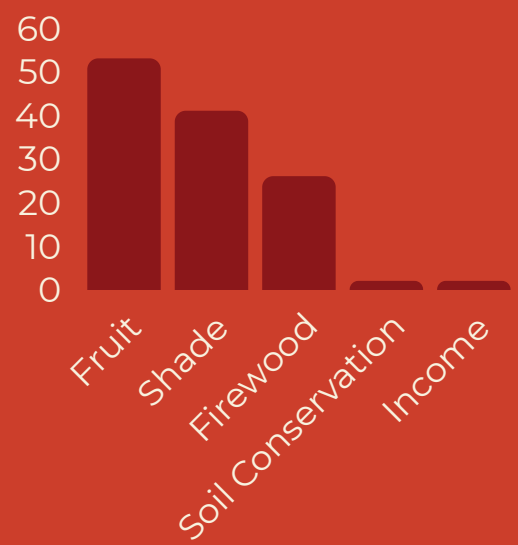
All surveyed households had trees present on their farms. However, only 33% of respondents had actively planted them, with the majority relying on naturally occurring trees that provide environmental, agricultural and household benefits.

Trees serve multiple functions within household livelihood systems, including the provision of firewood, shade, fruit, livestock fodder, and soil protection.

Respondents also recognised the role of trees in reducing soil erosion and improving environmental conditions. The widespread presence of trees demonstrates an existing foundation for agroforestry and landscape restoration initiatives.

These findings suggest strong potential for interventions that integrate agricultural production with environmental conservation, helping households to improve both resilience and productivity while restoring natural resources.

***How do you use trees?***





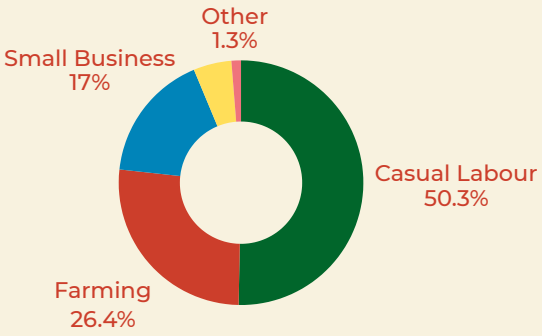

***Beneficiary: Jumwa and her grandchildren***

# Household Income & Economic Status

## Income Sources & Livelihood Diversification

Households rely on a variety of livelihood activities to meet their basic needs. The most commonly reported income sources included small-scale farming, casual labour and small businesses such as selling groundnuts or vegetables on the road-side.

*HH Income Sources*




However, many of these income streams remain informal, irregular and vulnerable to external economic and environmental shocks. This vulnerability is further heightened by the fact that the majority of households have few, if any, additional sources of income to fall back on, leaving them with limited financial resilience during periods of hardship.

*HH with no other income sources*



72.9%

## Savings and Financial Practices

Despite low income levels, participation in informal savings mechanisms was widespread. Many respondents reported involvement in table banking groups and community savings initiatives, with women playing a particularly important role in managing household savings and financial planning.

These groups provide an important safety net for households and represent a valuable foundation for future financial inclusion and livelihood-strengthening interventions.

## Household Income and Expenditure

Most surveyed households reported very low monthly incomes below KES 10,000, with 39.3% of households earning less than 5,000 KES a month (£29 per month). Income is largely directed towards meeting essential needs, including food, water, healthcare, education, transport, and farming inputs.

The findings indicate widespread economic vulnerability, with limited capacity for households to absorb unexpected shocks or invest in productive assets. While many respondents reported saving small amounts of money, savings levels remain modest and are often used to address immediate household needs.

## Markets and Economic Opportunities

Market access emerged as a significant constraint to improving household incomes. Many farmers reported selling produce directly to middlemen at the farm gate due to the costs associated with transporting goods to larger markets.

While this reduces transport expenses, it often results in lower prices and reduced profitability. Respondents identified low market prices, limited value addition opportunities, and post-harvest losses as key barriers to increasing agricultural income.

At the same time, the findings suggest opportunities to strengthen value chains, improve post-harvest handling, and support income diversification activities that enable households to capture greater value from their agricultural production.

## Youth Employment & Social Dynamics

The assessment found relatively low participation among young people, partly because many are employed in nearby Export Processing Zones (EPZs) and industrial facilities.

While these opportunities provide an important source of income, employment is often dependent on market demand and can be unstable. Community members expressed concern that periods of unemployment leave some young people vulnerable to social challenges, including substance abuse and economic insecurity.

These learnings highlight the importance of livelihood diversification and skills development opportunities that can support long-term economic resilience among young people.




*Small Female Business in Kikambala*

# Haller Farmers App

*HH aware of the Haller Farmers App*



5%

*HH Willing to use the App*



68%

## Awareness and Current Usage

Awareness of the Haller Farmers App was very limited across the surveyed households, with most respondents reporting that they had never heard of the platform or previously accessed digital agricultural advisory services. Among the small number of respondents who were familiar with the app, usage was primarily focused on vegetable production, poultry management, and soil conservation practices.

Despite this low awareness, mobile phones are widely used for communication, mobile banking (M-Pesa), and accessing employment and market opportunities, demonstrating a strong foundation for expanding digital agricultural services.

The Haller Farmers App therefore presents a significant opportunity to improve access to agricultural knowledge, climate information, and sustainable farming practices while supporting wider community wellbeing.

Continued investment in affordable energy and digital connectivity would further increase access to online services, strengthen market linkages, support small businesses, and enable greater uptake of digital learning platforms.

In the longer term, a community internet hub could provide a central location for digital training and access to essential online services and support when Haller's agricultural extension workers are not available on site.

## Digital Readiness & Opportunities

Although current awareness levels were low, respondents demonstrated a strong interest in receiving agricultural information, technical guidance, and ICT training through digital channels.

Farmers expressed a willingness to learn about improved farming practices and access agricultural knowledge using mobile technology, particularly where information could help address challenges related to water management, soil fertility, pest control, and crop production.

However, successful adoption is likely to depend on more than awareness alone. Factors such as digital literacy, smartphone ownership, network connectivity, and ongoing user support will influence uptake and long-term engagement.

## Implications for Agricultural Extension

The findings indicate significant potential for digital agricultural extension services within Kikambala. As farming households face increasing challenges associated with climate variability, declining soil fertility, and limited access to extension support, digital platforms offer an opportunity to expand access to timely and practical agricultural information.

With appropriate training, community sensitisation and ongoing farmer support, the Haller Farmers App has the potential to become an important tool for strengthening knowledge sharing, improving agricultural productivity and building climate resilience among smallholder farmers.

It will also provide a sustainable means of extending Haller's technical support beyond the lifetime of the project, helping to overcome limitations in field staff capacity while ensuring farmers continue to access practical guidance and best practice information.

# Household Health & Wellbeing

## Access to Healthcare

Most respondents reported seeking healthcare through formal health facilities when medical services were required. However, access to affordable healthcare remains a challenge for many households.

While health services are available within the wider area, respondents noted that many facilities are privately operated and often beyond the financial reach of low-income households. As a result, some households travel longer distances to access more affordable public healthcare services.

These findings suggest that healthcare access is influenced not only by the availability of services but also by household income levels and the affordability of treatment.

## Common Health Challenges

Respondents identified malaria, typhoid, tuberculosis, diarrhoeal diseases and respiratory infections as the most common health concerns affecting households within the community.

Several of these conditions are closely linked to broader environmental and public health challenges identified through the assessment, including water quality, sanitation infrastructure, drainage systems, and hygiene practices.

The findings highlight the interconnected nature of health, water, sanitation, and environmental conditions, reinforcing the importance of integrated approaches to community wellbeing.

***What is your nearest health facility?***




***Common illnesses experienced in the last 12 months?***

| | |
|---|---|
| Malaria | 48% |
| Typhoid | 26% |
| TB | 8% |
| Other | 8% |
| Diarrhoea | 6% |
| Respiratory illness | 4% |

92%

*Do you have information about or access to family planning services?*

## Family Planning & Health Information

Access to family planning information and services was reported to be relatively high among surveyed households with 92% of respondents stating their awareness of family planning.

Community members highlighted that family planning uptake has increased over the past decade, contributing to greater awareness of reproductive health and changing household demographics. Respondents suggested that increased access to information and health services has contributed to a gradual reduction in household sizes compared with previous generations.

## Health, Nutrition and Household Resilience

Although respondents did not identify malnutrition as a widespread concern, the assessment demonstrated the close relationship between household health outcomes, food security, water access, sanitation, and income levels.

Periods of poor agricultural production, limited access to safe water, and financial constraints can all affect household wellbeing and increase vulnerability to illness. Conversely, improvements in livelihoods, nutrition, water security, and environmental health are likely to contribute positively to overall health outcomes.

These findings highlight the importance of integrated resilience-building approaches that address the underlying drivers of vulnerability rather than treating health challenges in isolation.



*Traditional Makuti Thatched House*

# Interpretation of Findings

## Site & Situation

The baseline assessment indicates that Kikambala has strong potential for sustainable agricultural and community development.

The project's environmental setting is comparable to that of Haller Park, sharing similar coastal geology, fossilised pleistocene coral reef formations, maritime climatic conditions, and rainfall patterns. Haller's more than 50 years of environmental monitoring, research, and practical experience restoring degraded coastal ecosystems therefore provides a strong evidence base for designing interventions that are appropriate to the local context.

The surrounding area also offers opportunities for livelihood diversification. A number of small and medium-sized enterprises operate along the Malindi Road, including clothing manufacturers, food processors, packaging businesses, and hospitality services. While these provide some employment, opportunities remain limited and are insufficient to meet growing household needs, reinforcing the importance of strengthening agricultural productivity and income generation within the community.

## Settlement

The assessment found that Kikambala benefits from a well-established community leadership structure across six long-standing, scattered settlements. Governed under a single Chief, supported by an Assistant Chief and Village Elders, they exercise control over administrative operations regarding community members and community resources. The Chief reports directly to the District Commissioner.

This provides a strong foundation for community mobilisation, participatory planning, training delivery, and long-term monitoring.

Working through these existing governance structures will help ensure interventions are well coordinated, locally owned, and equitably implemented across the project area.

## Environmental Characteristics

Agriculture remains the primary livelihood for most households, yet production is largely subsistence-based and heavily dependent on seasonal rainfall. The area is generally flat, with soils suitable for cultivation, but much of the available land remains underutilised. Existing crop production is largely limited to small areas of maize, bananas, cassava, cowpeas, amaranth, okra, and sweet potatoes, reflecting both limited access to water and a lack of exposure to improved agricultural techniques.

There is considerable potential to increase productivity through regenerative farming practices, demonstration plots, farmer training, and improved soil and water conservation measures, including mulching, composting, tree planting, cover cropping, and terracing.

## Rainfall and Water

Water security emerged as one of the highest priorities for intervention. Existing groundwater supplies are often saline and vulnerable to contamination, making them suitable primarily for washing, bathing, and limited irrigation rather than drinking. Safe potable water is accessed through a small number of government standpipes, which are often chargeable, located some distance from households, and insufficient to meet community demand.

Rainfall patterns have become increasingly variable in recent years, creating significant challenges for rain-fed agriculture. Given the area's relatively high evaporation rates, traditional open water storage systems are unlikely to provide an effective long-term solution. Instead, the assessment identifies closed rainwater harvesting and underground water storage systems as a practical and sustainable approach to capturing rainfall during wetter periods, including El Niño events, while reducing contamination, limiting evaporation losses, and preventing mosquito breeding.

Combined with Haller's proven water conservation techniques, these interventions could substantially improve household water security, provide water for irrigation, and strengthen resilience to prolonged dry periods.

## Hygiene and Sanitation

The assessment also identified opportunities to improve sanitation, hygiene, and public health. Alongside investment in improved sanitation infrastructure, community sensitisation on hygiene practices, safe water treatment, and household water storage will be essential to reduce the incidence of waterborne disease and strengthen community wellbeing.

## Energy

Although electricity is available in parts of the community, high costs limit household use, with many families relying on small solar panels primarily for lighting, charging mobile phones, and radios.

Expanding access to affordable renewable energy would create opportunities to improve water purification, support more sustainable cooking technologies, strengthen digital connectivity, and enhance household wellbeing while reducing reliance on firewood.

## Communications

Digital technology presents an important opportunity to accelerate knowledge sharing and strengthen livelihoods. Mobile phones are already widely used for communication, mobile banking (M-Pesa), and accessing employment opportunities, providing favourable conditions for the Haller Farmers App to support farmer training, climate information, agricultural extension, market access, and wider community learning.

In the longer term, improved internet connectivity or a community digital hub could further expand access to information, financial services, education, and local enterprise development.



# Key Considerations

The baseline assessment confirms that Kikambala provides a strong foundation for an integrated programme combining regenerative agriculture, water security, renewable energy, sanitation, and digital knowledge sharing. However, successful implementation will depend on recognising and responding to several important contextual considerations identified through the assessment.

## Climate variability and environmental resilience

Emerging climate change trends continue to affect rainfall patterns, agricultural productivity and natural resource availability. Building climate resilience through regenerative agriculture, water harvesting, soil restoration and drought-tolerant kitchen gardening will therefore remain central to the project's long-term success.

## Land tenure and community confidence

Although land ownership is generally well established, land tenure security remains variable in some areas. Confidence in long-term land ownership is an important factor influencing households' willingness to invest in infrastructure, soil improvement and tree planting. Beneficiary selection and infrastructure placement will therefore consider tenure security to maximise sustainability.

## Community governance and accountability

The assessment highlighted strong local leadership structures and active community-based organisations. Effective implementation will rely on an accountable governance framework that works closely with community leaders to promote ownership, transparency and the adoption of Haller's regenerative agriculture principles throughout the project lifecycle.

## Integrated energy infrastructure

Renewable energy interventions should complement, rather than replace, existing public electricity services.

By combining household solar systems with strategically located community energy infrastructure, the project can improve energy access while remaining adaptable to future expansion of the national electricity grid.

## Market access and financial resilience

Improving agricultural production alone will not guarantee increased household incomes. Strengthening access to local markets, promoting diversified livelihoods and supporting financially sustainable farming practices will be essential to ensuring that productivity gains translate into lasting economic benefits.

## Cross-cutting implementation risks

Alongside these strategic considerations, several operational risks will require ongoing management throughout project delivery.

These include the risk of theft and vandalism of infrastructure, long distances between some households, variable electricity and communications coverage, rapid urbanisation and changing land use patterns, and a growing population bringing new behaviours and increasing pressure on natural resources.

Continued engagement with local leaders, community elders and community-based organisations will be essential to mitigate these risks and ensure long-term sustainability.

Beneficiary selection will continue to prioritise the most vulnerable households, particularly those lacking access to electricity, safe water and adequate sanitation, while targeting clusters of neighbouring households to maximise community-wide impact and facilitate efficient project delivery.

# Recommendations

Based on the findings of this assessment, the following recommendations are proposed to strengthen programme design and community resilience across key thematic areas:

### Agriculture and Livelihoods

- Expand climate-smart agriculture training.
- Strengthen soil fertility and pest management practices.
- Promote diversified and nutrition-sensitive farming systems.
- Support market access and value addition opportunities.
- Strengthen community savings and financial inclusion initiatives.

### Water, Sanitation & Hygiene

- Improve access to safe and reliable water sources.
- Promote household and community rainwater harvesting.
- Strengthen hygiene promotion and behaviour change activities.
- Improve sanitation infrastructure and environmental health management.
- Encourage efficient irrigation systems for enhanced agricultural productivity.

### Environment & Climate Resilience

- Expand agroforestry and tree planting initiatives.
- Strengthen soil conservation activities.
- Promote sustainable natural resource management.
- Encourage adoption of alternative energy solutions.

### Digital Agriculture

- Increase awareness of the Haller Farmers App.
- Strengthen digital literacy among farmers.
- Use demonstration farms and farmer champions to support adoption.
- Integrate digital extension services into agricultural programming.

### Health & Nutrition

- Promote nutrition-sensitive agriculture and medicinal plants.
- Strengthen preventative health awareness.
- Support integrated food security and nutrition initiatives.
- Improve access to health information and referral services.

### Monitoring, Learning & Community Engagement

- Continue community engagement and trust-building activities.
- Establish regular monitoring systems against baseline indicators.
- Strengthen collaboration with community-based organisations and local leadership structures.

# Conclusion

The baseline assessment demonstrates that households in Kikambala face interconnected economic, environmental, and climate-related challenges that continue to limit their resilience. Water insecurity, subsistence agriculture, inadequate sanitation, unreliable access to energy, and increasing climate variability all contribute to household vulnerability.

The findings strongly support Haller Foundation's proposed integrated approach. By establishing solar-powered community hubs that combine renewable energy, water infrastructure, sanitation, and climate-smart agriculture, the project will directly address many of the challenges identified during the assessment. The modular design also provides flexibility to expand services over time, enabling communities to build increasingly self-sustaining and climate-resilient livelihoods.

Working through five community clusters the pilot will strengthen food security, improve access to safe water and clean energy, increase agricultural productivity, promote environmental stewardship, and create opportunities for local enterprise. The cluster-based model will also encourage peer learning, community ownership, and the replication of successful approaches across neighbouring communities.

The baseline indicators established through this assessment provide a robust evidence base against which programme progress and long-term impact can be measured. Ongoing monitoring and evaluation will enable Haller Foundation and The Regen Trust to assess programme outcomes, adapt interventions where needed, and demonstrate measurable improvements in household resilience, livelihoods, and community wellbeing.











# REGEN TRUST







