



Agriculture Investment Opportunities in Kenya

Rice Processing Investment Case

Rice Processing Investment Case

Executive Summary



1

Market Opportunity



- Rice is increasingly becoming an **important part of the Kenyan diet**, as evidenced by **consumption growth of 38%**, due to increased urbanisation, middle class growth and an expanded retail market
- Kenya's **domestic rice sector has failed to capture an increased share of growing demand**, resulting in a heavy reliance on imports
- **Opportunities exist to expand local production** and processing of the cost effective NERICA upland variety of rice due to significantly higher and competitive yields

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Investment Highlights



- Opportunity to invest **\$15 MN into a rice processing plant, to dry, mill and package NERICA rice**, cultivated in the Perkerra and Kerio Valley National Irrigation Board schemes, as well as processing the **by-products of rice production**
- Investors can anticipate **revenues of \$7.3 MN**, and a **net profit margin of 29%** in Year 5 of operations
- Investment risks include supply chain challenges, inadequate water supply, poor irrigation infrastructure and poor prices of paddy

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Enabling Environment



- The **Kenyan government supports the industry** through multiple institutions including the Ministry of Agriculture's Rice Promotion Unit, the National Irrigation Board and the Kenya Rice Researchers' Forum
- Under the National Rice Development Strategy, key development areas have been identified to enable Kenya to **double its rice production by 2018 and expand its level of rice cultivation, which currently stands at 20,000 of the total potential of 540,000 Ha irrigable land**

Rice Processing Investment Case

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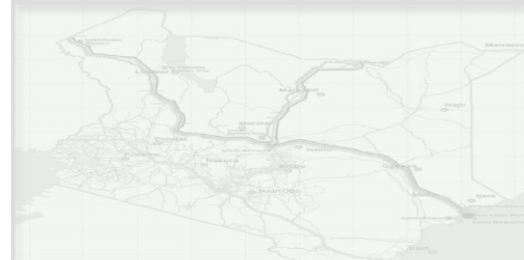
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Rice Processing Market Opportunity

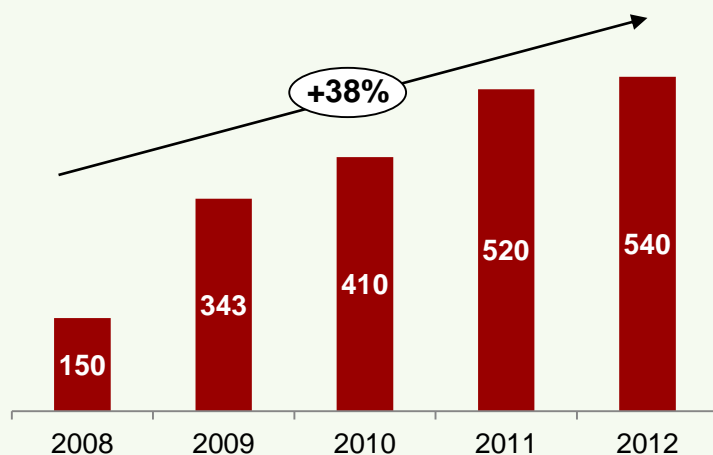
An Increasingly Important Staple



Rice is becoming an important part of the Kenyan diet as evidenced by strong consumption growth, driven by a growing urban population and an expanding retail sector offering convenience based meals

Consumption of Rice in Kenya

Rice Consumption in Kenya ('000s MT)



- Rice is increasingly becoming an important part of the Kenyan diet as evidenced by **growth of 38% in total consumption**
 - **Per capita rice consumption** in Kenya was at seven kilograms per annum and is **projected to rise by 57% to 11 kg by 2015**

Drivers of Increased Demand

Increasingly Urban Population

- An increasing preference for rice is exhibited amongst Kenya's urban population of 10.5 MN, making rice the **third most important staple food in Kenya** after maize and wheat. Kenya's urban population is projected to reach 50% of the total population by 2050

Growing Middle Class and Incomes

- Kenya's middle class accounts for ~17% of the population and is projected to continue to grow, **demanding higher value products such as rice and value added processed rice products**

Expanded Retail Market

- Kenya's expanding retail sector is **providing urban consumers with greater convenience and lifestyle solutions in meals** and has created strong niches for pre-prepared meals and snack foods based on rice

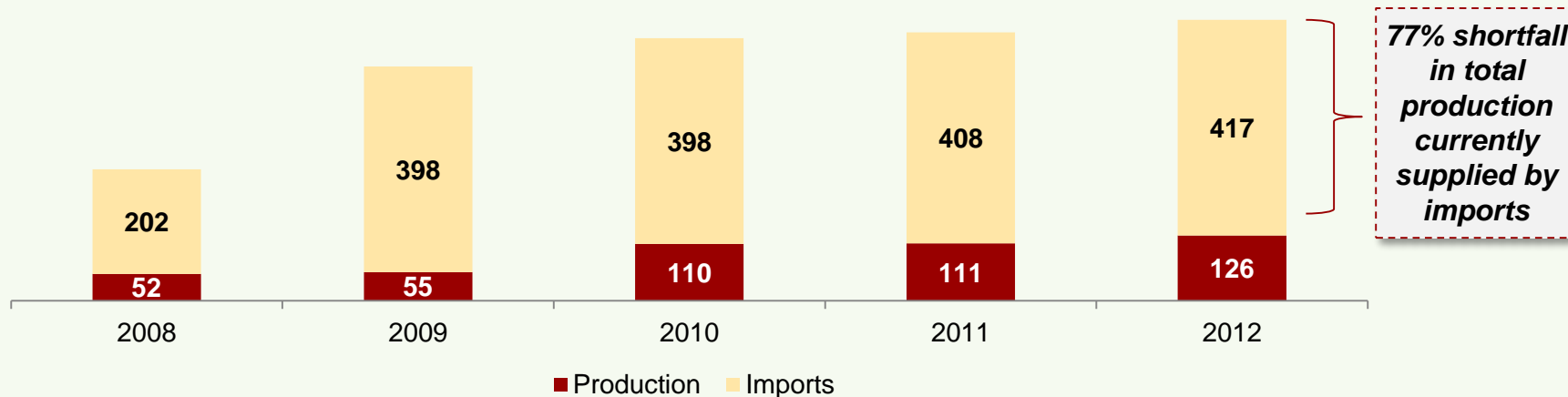
Untapped Local Production Potential



Despite the predominance of imports, local production is growing as the domestic sector continues to focus on improving yields and quality through increased research, mechanisation and farmer training

Deficit in Local Production

Kenyan Rice Supply ('000s MT)



- Kenya's **domestic rice sector has failed to capture an increased share of Kenya's growing demand for rice**, resulting in a heavily reliance on imports from Pakistan and India (84% and 12% of total imports respectively), in addition to unrecorded cross border trade from Tanzania
- **However, opportunities exist to accelerate the growth in local production** as extensive research and technical assistance is being provided to expand on current farmer yields and make the domestic sector more competitive by taking advantage of the potential for 540,000 Ha of irrigated rice and 1 MN Ha of rain-fed rice in the country

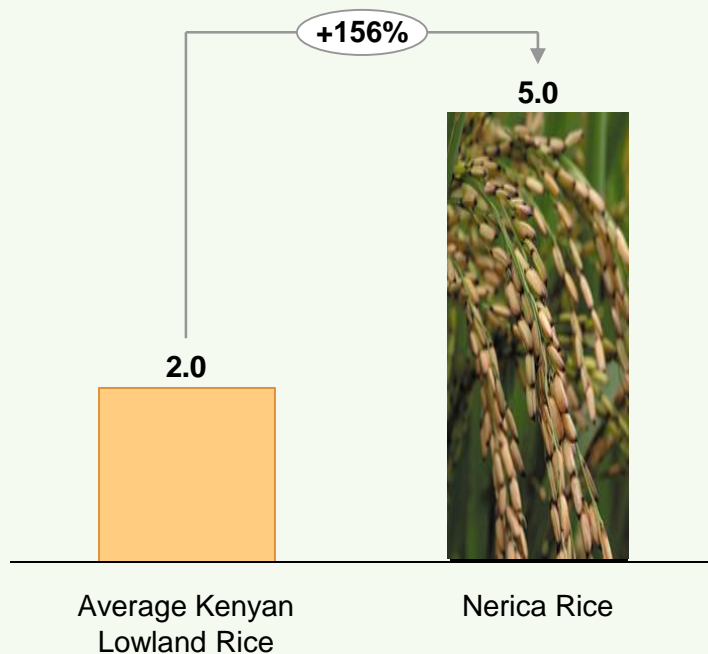
A Competitive Advantage through Upland Rice

The introduction of the New Rice for Africa (NERICA) variety in particular offers Kenya a significant competitive advantage in rice production given its higher yield potential and lower production costs

Advantages of NERICA Upland Rice

The NERICA variety is a hybrid rice variety, developed through crossing-breeding of disease and drought resistant African species and high-yielding Asian species

Comparative Average Rice Yields (MT/Ha)



Able to Grow in Harsh Climatic Conditions

- Does not require marshy water logged paddy like traditional lowland rice, making it **suitable for cultivation in semi arid regions, expanding the potential area for rice production in Kenya**

Increased Productivity

- Currently yielding an average of 5 MT/Ha in farms within the Perkerra irrigation schemes, with **recorded maximum yields of up to 7 MT/Ha**

Reduced Production Costs

- Requires less rainfall than lowland rice and less irrigation **reducing the cost of water**
- **Involves minimal labour and chemicals** to control pests and diseases

Rice Processing Market Opportunity

Competitive Landscape



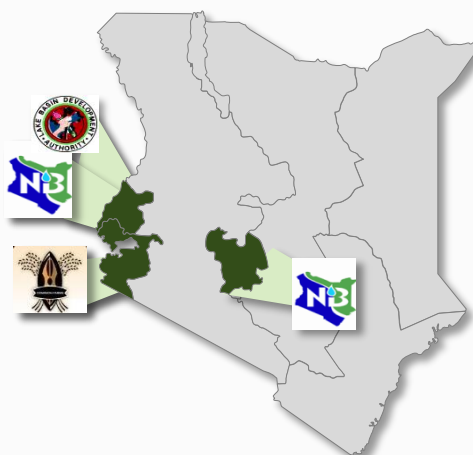
Kenya's rice market is concentrated and provides an opportunity for a well-managed rice mill to make gains, as government owned millers are significantly under-capacitated and constrained by limited funding

Current Domestic Competitive Landscape



Lake Basin Dev. Authority

- The Authority has a Mill in Kisumu City with an **annual milling capacity of 24,000 MT**
 - The mill has a number of facilities including a seed cleaning and drying unit, rice milling and packaging plant, 17,000 MT bulk storage, a seed treatment and packaging plant



Mwea Rice Mills (MRM)

- MRM is the **main miller of Kenyan Pishori rice**, sourcing rice from the Mwea Irrigation Scheme in Kirinyaga County and **providing ~75-80% of milled rice in Kenya**
- MRM has a high capacity to mill most of the rice produced in Mwea at a rate of 24 MT per hour, but is **under-capacitated due to aging machines and requires major rehabilitation**



Dominion Farms

- Dominion, located in western Kenya, is the only **vertically integrated large scale** private sector owned **farm chain in Kenya**
- Its plant has an **annual capacity of 10,000 MT** and when its 6,900 Ha are in full production, capacity could reach 12,000 MT of rice per year



Western Kenya Rice Mills (WCRM)

- **The National Irrigation Board's WCRM mills Pishori and Ahero rice** and sources its rice from the Ahero, West Kano and Bunyala Schemes
- The mill has an installed milling capacity of 3.5 MT per hour but is **not maximised due to inadequate market outlets**

Rice Processing Investment Case

Investment Highlights



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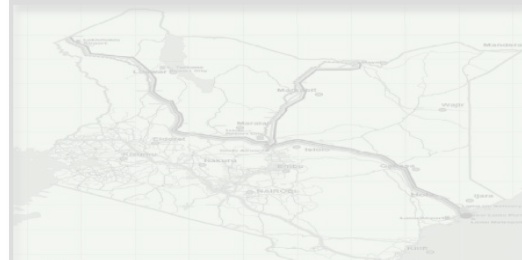
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Enabling Environment



- The **Kenyan government supports the industry** through multiple institutions including the Ministry of Agriculture's Rice Promotion Unit, the National Irrigation Board and the Kenya Rice Researchers' Forum
- Under the National Rice Development Strategy, key development areas have been identified to enable Kenya to **double its rice production by 2018 and expand its level of rice cultivation, which currently stands at 20,000 of the total potential of 540,000 Ha irrigable land**

Operational Highlights



Investment will produce white milled rice to be sold to Kenyan local markets through retailers and wholesalers, as well as generating by-products including husk-based charcoal, rice bran and poultry feed

Target Markets



- NERICA rice will be sold to **Kenyan local markets**, currently demanding in excess of 540,000 MT per annum
- Currently **~420,0000 MT annual rice deficit** in local markets

Product & Price



- **NERICA white milled rice**
- **By-products** include rice bran, poultry feed and charcoal from rice husks
- Proposed price of **USD1,760 per MT of high quality rice** and **USD588 per MT of broken rice**
- Price will fluctuate given productivity, supply, and demand factors

Channel



- Majority of sales to **retailers, wholesalers and distributors**
- Direct sales to **key end-users** (household consumers), depending on market relationships

Production & Processing



- **Rice mill** with a maximum capacity of 24MT per hour and a **total processing capacity of 22,600 MT**
- Proposed location in Marigat District

Sourcing Model



- Centralised outgrower scheme on over **4,500 Ha of land**, supported by contract arrangements with **over 750 farms in the Perkerra and Kerio Valley Irrigation Schemes**

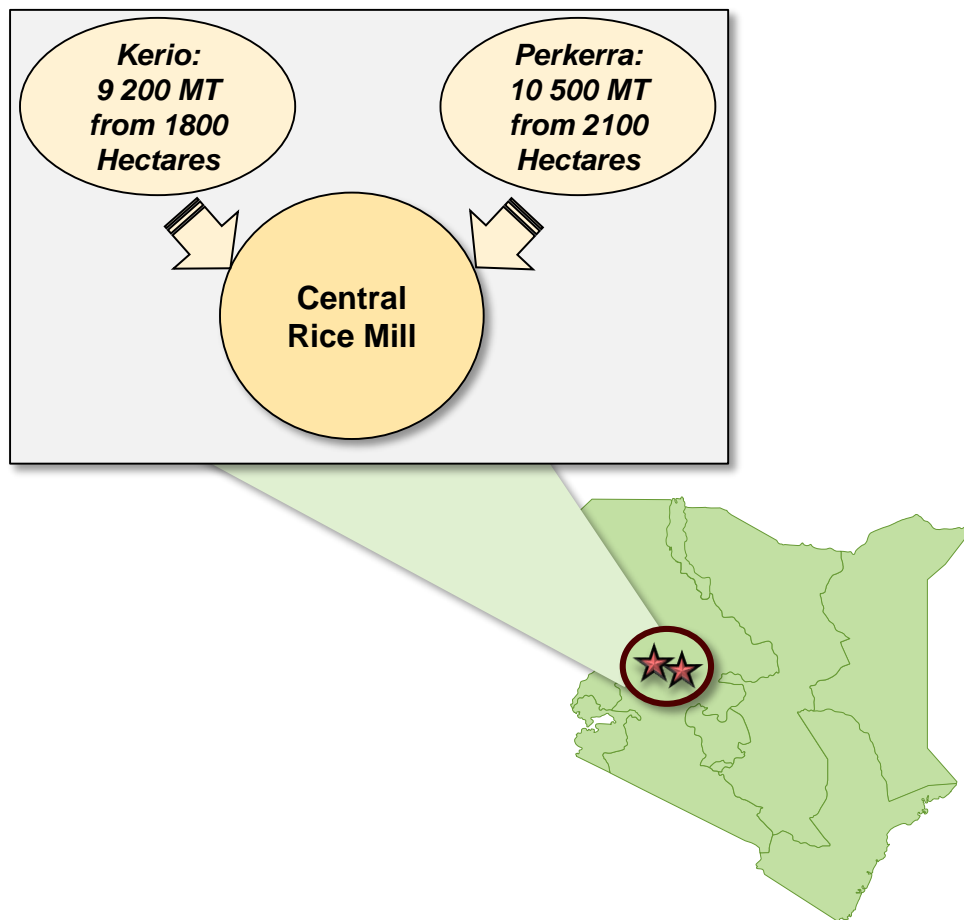
Rice Processing Investment Highlights

Centralised Outgrower Scheme



Investment requires the establishment of a centralised mill through an outgrower scheme with ~750 farms in Perkerra and Kerio Valley, to enable milling of over 15,000 MT of rice on ~3900 Ha of land by Year 5

Illustrative Map of Centralised Outgrower Scheme



Description of Scheme

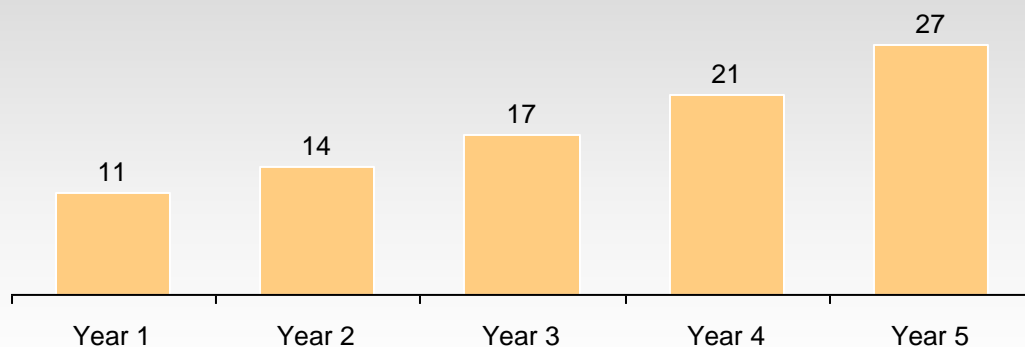
- The investment opportunity identified is for the **establishment of a rice processing plant, milling a maximum capacity of 22,590 MT of upland rice** sourced from the Perkerra and Kerio Valley irrigation schemes through contract-based farming
 - These existing schemes **cover an area of 4,500 Ha**, with 3,200 Ha of readily arable land and ~1,000 Ha currently under rice production
 - The NERICA upland variety will be milled and offers competitive yields of 5 MT/Ha on average, although yields as high as 7 MT/Ha have been recorded in the farms within Perkerra irrigation schemes
- In addition to the Perkerra and Kerio Valley irrigation schemes, other investments could be made in the **western part of Kenya, by sourcing paddy rice from the Homa Bay irrigation schemes**

Financial Performance and Investment Summary



Investment will reach revenues of \$27M in Year 5 when the model is scaled up to 85% of the total available hectares of 22,590; cost assumptions for each ton will generate a net profit margin of 29%

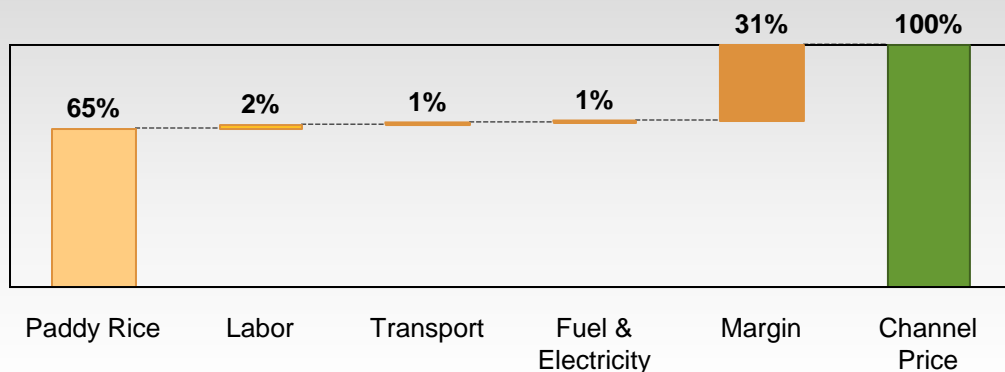
Revenue (MN USD), Year 1 – Year 5



Investment¹

Debt Investment	\$6.0M
Equity Investment	\$9.0M
Total Investment Required²	\$15.0M¹

Channel Cost Structure (% of Unit Price, Year 5)



Expected Returns

EBITDA Return (Year 5)	\$7.9M
Net Profit Margin (Year 5)	29%
Net Income (Year 5)	\$7.3M

Note: ¹A debt/equity ratio of 40%:60% is assumed

Source: Interviews with Ministry of Agriculture's Rice Promotion Unit and KARI; Ministry of Agriculture - Rice Value Chain Report, 2012; International Rice Research Institute

Potential Ancillary Business Opportunities



In the long term, opportunities exist to expand this investment to the production of value added rice products such as rice cakes, noodles and crackers, as well as utilising by-products such as rice husks

Expanding to other NIB Scheme areas



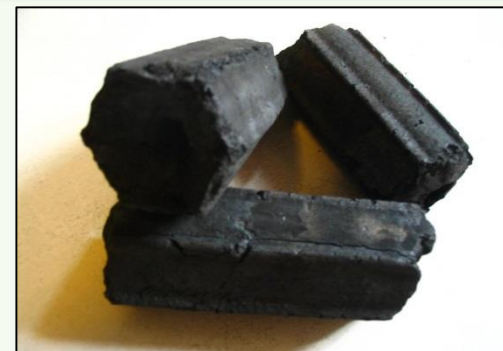
- Irrigation schemes in semi-arid Homa Bay in western Kenya, namely the Homabay, Migori and Ndhiwa schemes, **offer an opportunity to expand processing** of the upland rice variety beyond the Kerio Valley and Marigat districts
- The area has the **potential to produce rice on 1,474 Ha of land and benefit over 3,000 farmers**

Value-Added Rice Products



- The mill could expand its facilities to install capacity to **manufacture value-added rice products** such as rice cakes, noodles, crackers and cereals
- This presents a opportunity to significantly **improve existing margins as value-added products typically command higher margins on retail sales**

By-Products



- An opportunity also exists to **utilise the by-products of rice production, particularly rice husks which account for 20% of all paddy rice produced**, to manufacture products such as charcoal, bio-fertilizers, animal feed and pest control agents

Positive Social Impact

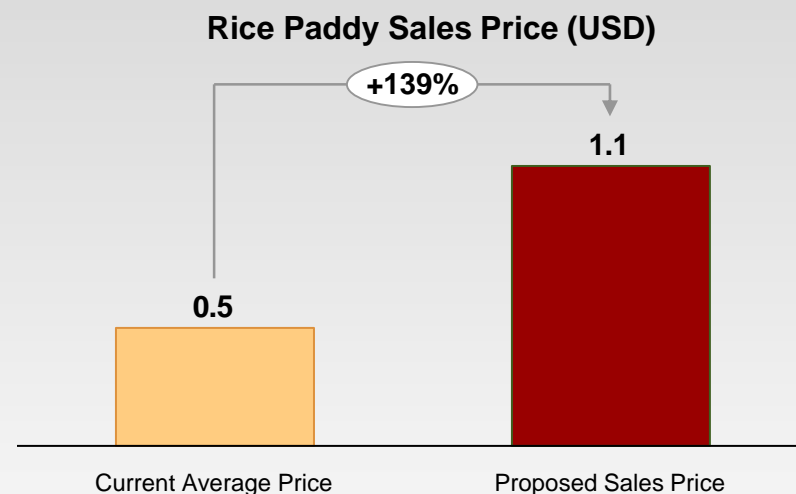


Investment will provide increased incomes to rice farmers in some of the most marginalised areas of central Kenya, benefitting over 13,000 people, and will help to create more sustainable use of their arable land

Empowered Farmers, Enhanced Potential

- The Perkerra Irrigation Scheme was established in the Marigat District which experiences harsh climatic conditions. These conditions historically allowed farmers to only cultivate minimal volumes of crops such as onion and maize
- The **introduction of the NERICA rice variety**, which is able to grow in semi-arid areas such as Marigat, presents a **significant opportunity to create prosperity for farmers and their surrounding communities** through wide-scale production and processing of rice in the area
- Equity Bank has already supported this potential through the provision of funds to farmers to expand their area for cultivation as well as providing a **business management course** under the Financial Knowledge for Africa (FIKA) literacy programme
 - Education is also helping farmers improve the product they are selling and consequently, **increase the potential for greater incomes** from sales of their rice

Higher Prices and Income Stability



- Due to efficiencies from economies of scale, the mill will be able to offer a purchase price to farmers that is **139% higher than average market rates**
- The proposed mill will provide a **regular and reliable market** for rice farmers in the Perkerra and Kerio Valley schemes to sell their output, and enable them to **support over 13,000 beneficiaries**

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Kenya's Enabling Environment



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Role of the Kenyan Government



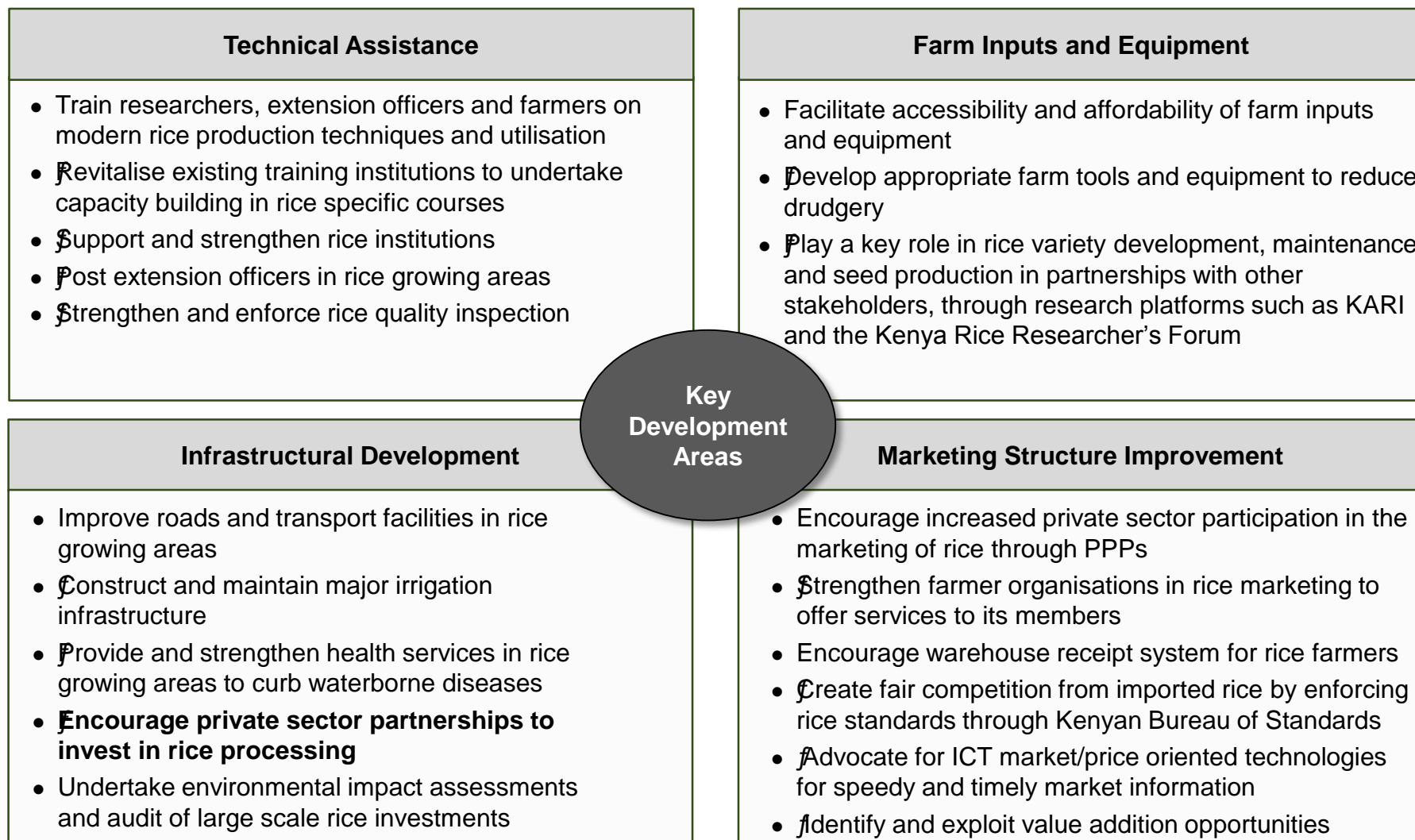
The Government of Kenya facilitates the activities of several public sector organisations to support the development and growth of the rice sector

Public Sector Support	
Ministry of Agriculture Rice Promotion Unit, and Ministry of Water and Irrigation Development	<ul style="list-style-type: none"> • The Rice Promotion Unit conducts extensive research on rice production in Kenya, in addition to collaborating with the National Irrigation Board (NIB) to support rice farmers and provide limited extension services for other alternative crops • The Ministry of Water & Irrigation Development is responsible for providing overall policy guidance to all water and irrigation actors in the country, including the NIB
National Irrigation Board (NIB) And Mwea Irrigation Agricultural Development (MIAD)	<ul style="list-style-type: none"> • The NIB operates and maintains major irrigation and drainage infrastructure and roads, and water distribution, in addition to expanding irrigation development and administering public irrigation schemes on behalf of government • MIAD is the research and extension wing of NIB, which provides research and extension services to farmers in public irrigation schemes, as well as maintaining demonstration farms to train farmers on good rice cultivation and irrigation practices
Kenya Rice Researchers' Forum (KRRF)	<ul style="list-style-type: none"> • KRRF focuses rice research to avoid duplication and wastage of funds, through a network of researchers that engage on recent achievements and the most pressing needs of Kenya's rice subsector, members include the Ministry of Agriculture, NIB, Jomo Kenyatta University of Agriculture and Technology, KARI and JICA • KRRF's key objective is to map out research needs in the country to improve the quality of rice and rice products in Kenya

Key Development Areas under National Rice Strategy



The GoK has identified four key areas in which interventions will occur under the National Rice Development Strategy to achieve the objective of doubling the 2008 level of rice production by 2018





Abbreviations and Acronyms

BN	Billion
EBITDA	Earnings Before Interest, Taxes, Depreciation, and Amortization
FAO	Food and Agriculture Organisation
FIKA	Financial Knowledge for Africa
Ha	Hectares
JICA	Japan International Cooperation Agency
KARI	Kenya Agricultural Research Institute
Kg	Kilograms
KRRF	Kenya Rice Researchers' Forum
MIAD	Mwea Irrigation Agricultural Development
MN	Million
MT	Metric Tons
MRM	Mwea Rice Mills
NERICA	New Rice for Africa
NIB	National Irrigation Board
NRDS	National Rice Development Strategy
USD	United States Dollar
USDA	United States Department of Agriculture
WKRM	Western Kenya Rice Mills