



Agriculture Investment Opportunities in Kenya

Mango Production Investment Case

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Executive Summary



1

Market Opportunity



- Mangoes are increasingly becoming an important fruit in the Kenyan diet, with **domestic, regional and global demand for processed mango on the rise**
- Despite Kenya's competitive advantage in production and the presence of large scale processors, **there is insufficient local processing of mango products, due to limited cultivation of processing friendly varieties**
- There is an **opportunity for a commercial** nucleus-outgrower scheme to guarantee production to retailers, processors, and exporters

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Investment Highlights



- Opportunity to invest **\$30.2M into producing Ngowe mangoes** with an estimated selling of over 190,000 Ngowe mangoes by Year 5 of operations
- Investors can anticipate **revenues of \$41.7 million**, an **IRR of 21% and ROIC to be 52%** by Year 5 of operations
- Investment risks include supply chain, regulatory, land constraints, labour, environmental and collaboration issues

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Enabling Environment



- The **Kenyan government is considering several interventions**, including prioritising specific areas for the construction of roads and easing land acquisition, to provide an attractive environment for investment
- The **Kenyan government supports the industry** through the Horticultural Crops Development Authority and Kenyan Agricultural Research Institute



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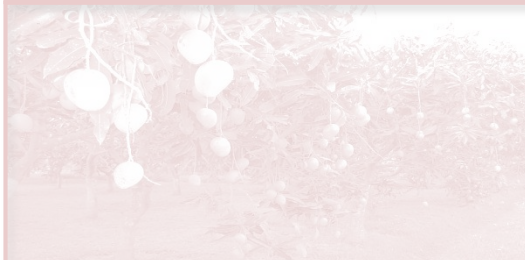
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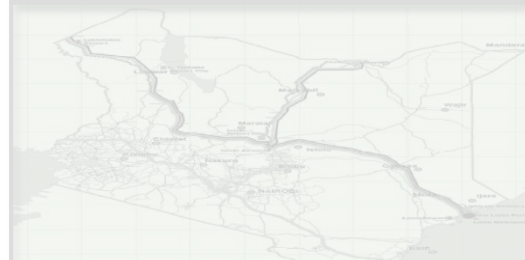
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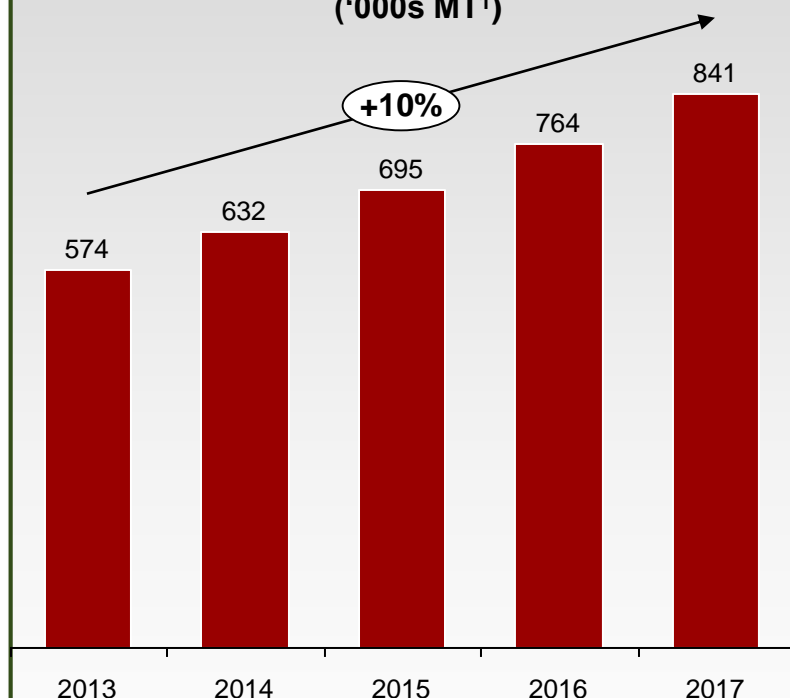
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Demand for Mangoes and Processed Products on the Rise

Mangoes are increasingly becoming an important fruit in the Kenyan diet, with domestic, regional and global demand for processed mango products like juice, jams, seed oil and pulp on the rise

Projected Mango Consumption

Forecasted Mango Consumption in Kenya
(‘000s MT¹)



Sources of Increased Demand for Mangoes

Growing Importance in Kenyan Diet

- Mangoes have become an increasingly **important fruit in the Kenyan diet**, with the average Kenyan consuming an estimated 12.7 kg per year

Increased Demand for Processed Products

- There is a **massive and increasing regional and global demand for mango juice and other processed products** such as, dried mango confectionery products, green mango in brine or vinegar for processing, jams, preserves, chutneys and mango seed oil for cosmetics
- However, there is **insufficient processing capacity to enable local production to meet demand for value-added mango products**, resulting in increased imports of mango pulp and juice to Kenya

Note: ¹Assumes conservative annualized growth of 10% per year

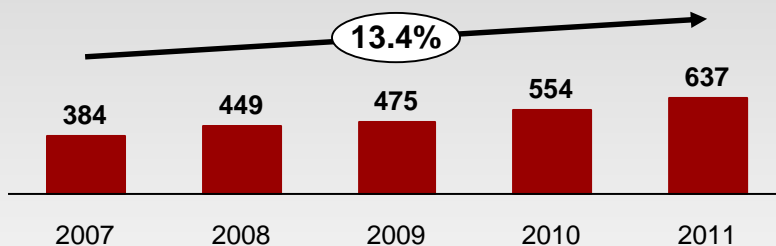
Source: FAOSTAT Database; interviews with Ministry of Agriculture, Horticultural Crops Development Authority, TechnoServe, and Kenyan agribusinesses; International Trade Center TradeMap; United Nations Conference on Trade and Development;); "Market Opportunities for Mango Growers," Fintrac, USAID-Kenya

Competitive Production, Limited Processing Capacity

Kenya has an abundant supply of mangoes and is the largest producer in the EAC, with a competitive advantage of having amongst the highest mango yields in the world

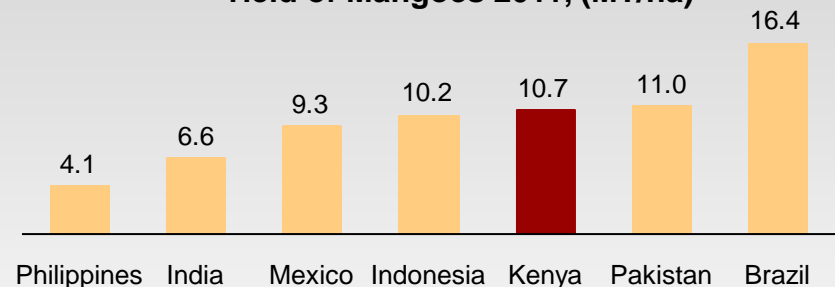
Production of Mangoes in Kenya

Domestic Production of Mangoes¹ ('000s MT)



- Kenya is the **largest producer of mangoes** within the East African Community (EAC), **experiencing significant growth of its production volumes** while other countries within the region experienced minimal to no growth in production volumes
- The majority of mangoes are grown in the Coast (68%), followed by Eastern Province (17.5%) and Nyanza (5%)

Yield of Mangoes 2011, (MT/ha)



- Kenya boasts **among the highest mango productivity in the world**, and can exploit its favorable agro-climatic conditions for mango cultivation
- Kenya's competitiveness in the mango export market significantly **enhances from November to January**, as mango production in Kenya during this season is high while production in other countries is low

Despite Kenya's competitive advantage in production and the presence of large scale fruit processors, there is insufficient local processing of mango products, due to limited cultivation of processing friendly varieties, such as the Ngowe Mango

Note: ¹Includes guavas and mangosteens

Sources: FAOSTAT Database; "Sweetening the Mango: Strengthening the Value Chain," Anita Msabeni et. al. (2010); "Market Opportunities for Mango Growers," Fintrac, USAID-Kenya, and Kenya Horticultural Development Program, 2010; Industry Interviews and the Horticultural Crops Development Authority

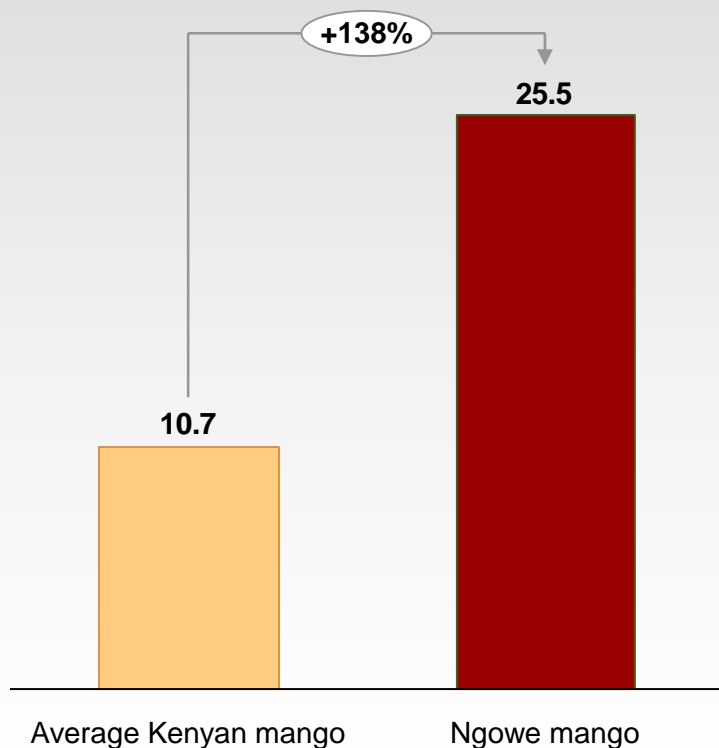
Untapped Cultivation Potential of Ngowe Mangoes



The Ngowe mango, in particular, provides Kenya with a significant competitive advantage given its extremely high yield and attractiveness as a processing variety for local and export markets

Advantages of Production of Ngowe Mangoes

Yield of Average Kenyan Mango vs. Ngowe Mango (MT/Ha)



Increased Productivity

Suitability for Processing

- Its yield is estimated at 25.5 MT/Ha, **more than twice the national average mango yield**, making it attractive to exporters, processors, and local wholesalers and retailers
- The Ngowe mango's deep yellow flesh characterises **its excellent quality and high brix content**, which contributes to higher quality and quantity of pulp, making it attractive for mango processors



Opportunities for Large Scale Ngowe Mango Producer

Currently, mango production is dominated by smallholder farmers, with no large commercial producers, presenting a viable production opportunity for a new entrant

Opportunity for Large Scale Entrant Cultivating Ngowe Mangoes for Ready Markets

- Most mango producers in Kenya are **smallholder farmers that produce under rain-fed conditions** with little mechanisation, with **no industrial-scale mango producers** currently operational in Kenya
- A new entrant can focus **on large-scale production of the Ngowe variety** in the short term, **collaborating with existing smallholder farmers** and contracting them into an outgrower scheme to target three growing customer segments who are looking for a larger producer of mangoes



**Ready Set of
Buyers**

Local Markets,
*e.g. Wholesalers,
retailers, open-air
markets*

Mango Processors,
*e.g. Milly Fruits, Kiburi,
Kevian, Sunny
Processors, All Fruits*

Fruit Exporters,
*e.g. East African
Growers, Kenyan
Horticultural Exporters*

Several agribusinesses have already noted that one large producer, guaranteeing consistent production, would allow them to scale up their processing or exporting operations

Mango Production Investment Case

Investment Highlights



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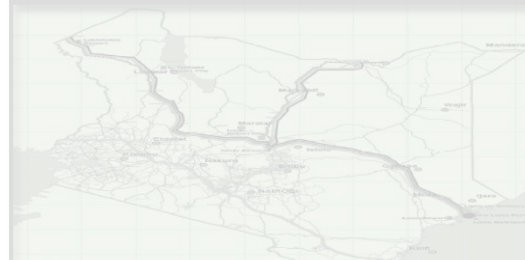
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Operational Highlights



The opportunity identified requires investing in a series of mango nucleus farms with sourcing support from outgrowers

Target Markets



- Mangoes will be sold **in the Kenyan market** to wholesalers, processors, and exporters

Product



- **Fresh Ngowe mangoes**, assuming that 15% will be of high-quality and sold to exporters, 50% of medium-quality and will be sold to processors, and 35% of lower-quality and will be sold to local markets; they will be packaged in 16 kg crates

Price



- **\$360 per MT of high-quality** mangoes to exporters
- **\$216 per MT of medium-quality** mangoes to processors
- **\$144 per MT of lower-quality** mangoes to wholesalers and retailers

Channel



- **Local wholesalers, retailers, and markets** to appeal to Kenyan consumers
- Kenyan **mango processors** in the Central and Coast provinces
- **Horticultural exporters** located in Nairobi

Sourcing Model



- Series of **seven 50-hectare nucleus farms**, for a total of 350 hectares, along the **Tana River Delta**
- Supply supported by contract arrangements with **over 6,000 outgrowers**

Mango Production Investment Highlights

Nucleus Farm and Outgrower Scheme



A series of seven nucleus farms and an outgrower scheme will together cultivate over 6,300 hectares by Year 5 of operations along the Tana River Delta from Garissa to Kipini

Illustrative Map of Nucleus Farms ¹



Production Operation

- The investment opportunity identified is a **mango farm company**, comprising **seven greenfield 50 Ha nucleus farms** for a total of 350 Ha of land
 - The seven farms are spread out along the Tana River Delta to **reflect the distribution of mango farmers** in the region to ensure **cost-effective transportation**
- The opportunity will also include an **outgrower scheme** that is forecast to start at 669 Ha in Year 1 of the investment and eventually grow to **6,022 Ha by Year 4**
- **~60 collection centers** will be set up, one for ~100 outgrowers, which will be dispersed evenly along the Tana River Delta to mitigate transportation and storage challenges

Note: ¹ The operating model assumes seven mango farms along the Tana River Delta; locations of these farms have been suggested through interviews with Kenyan agribusinesses and TechnoServe and are open to change pending soil suitability conditions and land access

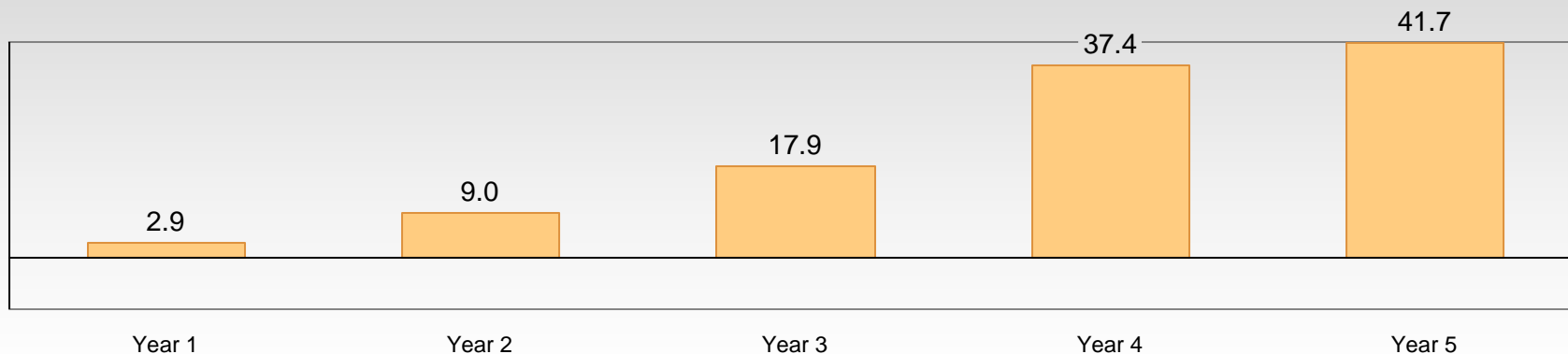
Mango Production Investment Highlights

Financial Performance Summary

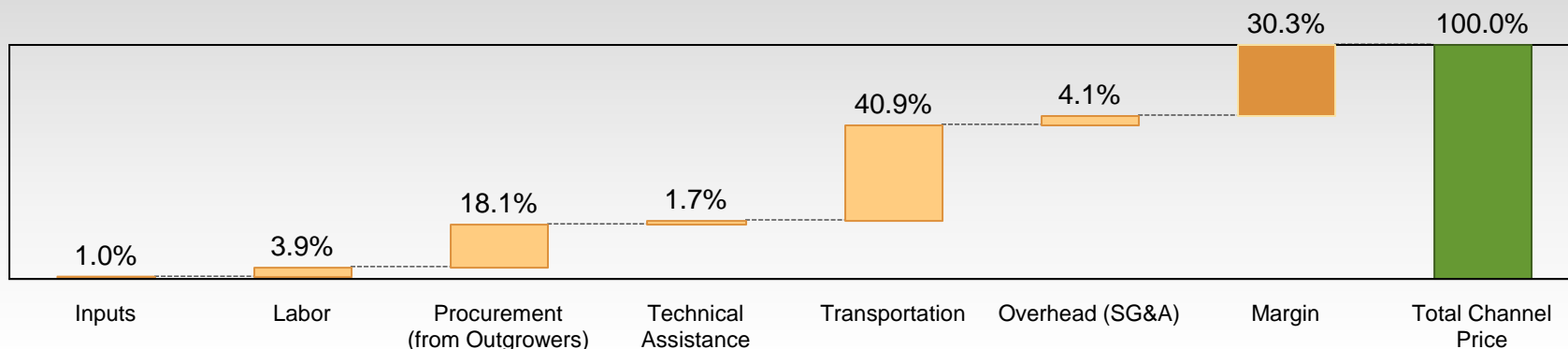


Revenues have been conservatively forecast to ramp up over the first five years, while cost assumptions suggest transportation will be the largest contributor to operational expenditures

Revenue (Million USD), Year 1 – Year 5



Cost Structure for Mango Farm Company (% of Operating Expenditures, Year 5)





Capital Investment and Forecast Returns

An initial investment of \$30.2M with a 40% debt ratio is forecast to deliver an IRR of 20.7% and ROIC of 51.8% after five years of operations and be cash positive by Year 4

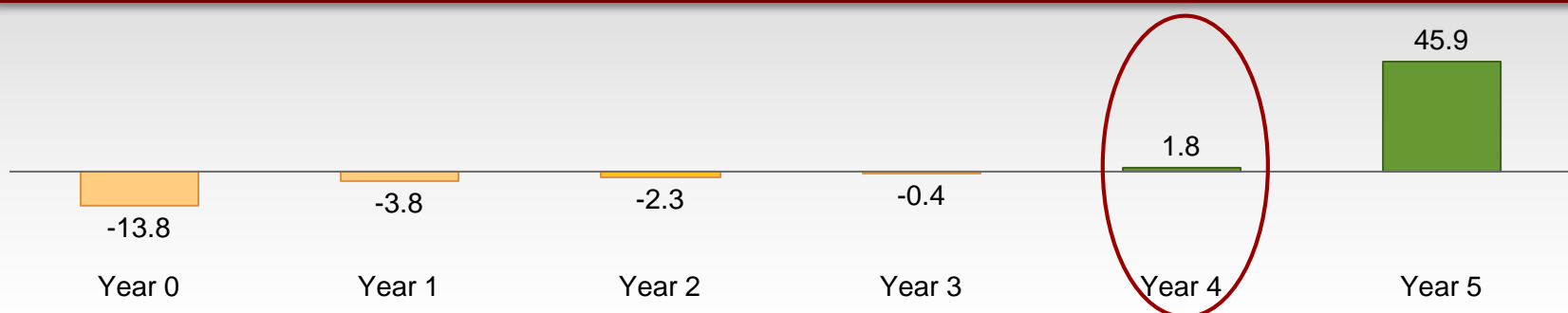
Investment ¹

Debt Investment	\$12.0M
Equity Investment	\$18.2M
Total Investment Required ²	\$30.2M
Land	\$170,351
Buildings	\$2.9M
Equipment ³	\$2.7M
Total Fixed Assets	\$5.7M

Expected Returns

NPV	\$19.5M
Internal Rate of Return (IRR)	20.7%
ROIC (Year 5)	51.8%
EBITDA Return (Year 5)	\$12.6M
Net Profit Margin (Year 5)	20.3%
Operating Revenue (Year 5)	\$41.7M
Net Income (Year 5)	\$8.5M

Forecast Free Cash Flows (Million USD)⁴



Notes: ¹ The assumption that all capital investment will take place in Year Zero is conservative, and investment can be staggered over the initial business setup phase; Year Zero consists of a three-year grace period where land clearing and initial harvesting will occur; this grace period was suggested by PKF Kenya; ² A debt:equity ratio of 40%:60% is assumed; ³ Equipment costs include the costs of clearing of land and the water license; ⁴ Nominal cash flows were assessed in this model

Source: Industry Interviews



Potential Ancillary Business Opportunities

Several opportunities exist that could help enhance the mango production opportunity in the future to increase mango supply to exporters, processors, and local markets

Expansion of Nucleus Farms

- By Year 5 the farm company will cultivate 350 Ha of land and have an outgrower scheme that extends beyond 6,000 Ha
- The farm company **could consider expanding its cultivated area** in the longer term to increase its share of mango production
- Expansion of nucleus farms will **help guarantee large deliveries of mango inputs to buyers** such as exporters and mango processors

Intercropping with Other Fruits and Vegetables

- Irrigation expands cultivated possibility for **intercropping with passion fruit, banana, pineapples, vegetables, and papaya**
- The farm company can achieve **economies of scale** by engaging in efficient intercropping to generate additional revenues from cultivated land

Semi-Processing of Mangoes

- Increased mango production can open new opportunities for **semi-processing**, which would incorporate the **handling, slicing, and freeze-drying of mangoes**
- A semi-processing business would target **local and foreign mango processors** who would use the freeze-dried mangoes for pulp and juice production

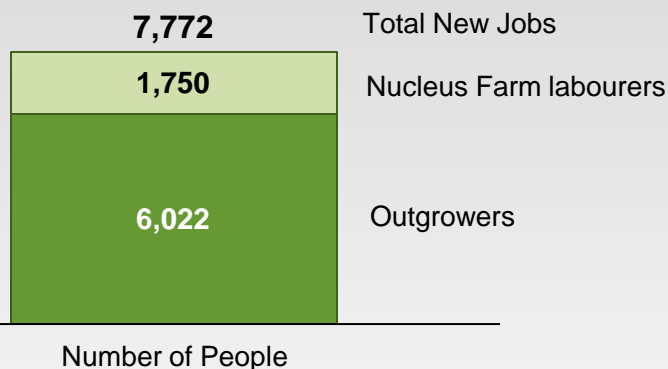
Positive Social Impact



Execution of the mango production investment opportunity will result in several development benefits, notably job creation and increased smallholder farmer incomes

Job Creation

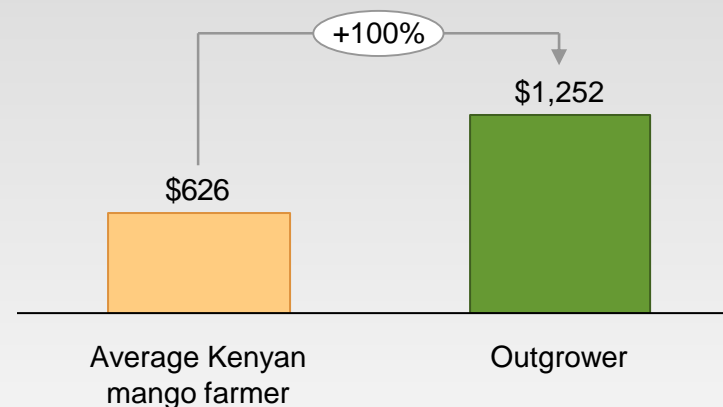
Employment Generation by Year 5



- By employing its seven nucleus farms and expanding its outgrower scheme, the mango farm company is **forecast to create over 7,700 jobs by Year 5**

Impact on Smallholder Farmer Income

Revenue Generation of Mango Farmer (USD) by Year 5



- Compared to the average Kenyan mango farmer, farmers in the outgrower scheme are forecast to **generate twice as much revenue**
- Moreover, the farm company will provide **technical assistance** and access to agro-inputs to support outgrowers' enhanced crop management

Mango Production Investment Case

Kenya's Enabling Environment



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Role of the Kenyan Government



The Government of Kenya facilitates the activities of three public sector organisations to support and develop the horticultural industry, which impacts the mango sector

Public Sector Support

Horticultural Crops Development Authority (HCDA)

- Regulates the horticulture industry and provides **advisory and marketing services** to industry stakeholders
- Develops, promotes, and facilitates growth through appropriate **policy and technology**
 - HCDA recently introduced low bark grafting technology of mango fruit seedlings to support disease management for mangoes

Kenya Agricultural Research Institute (KARI)

- Conducts **research programs** to support improved **productivity** for food, horticultural, and industrial crops
- Conducts **soil suitability surveys and feasibility studies** to test cultivation potential for crops

Agricultural Sector Coordination Unit (ASCU)

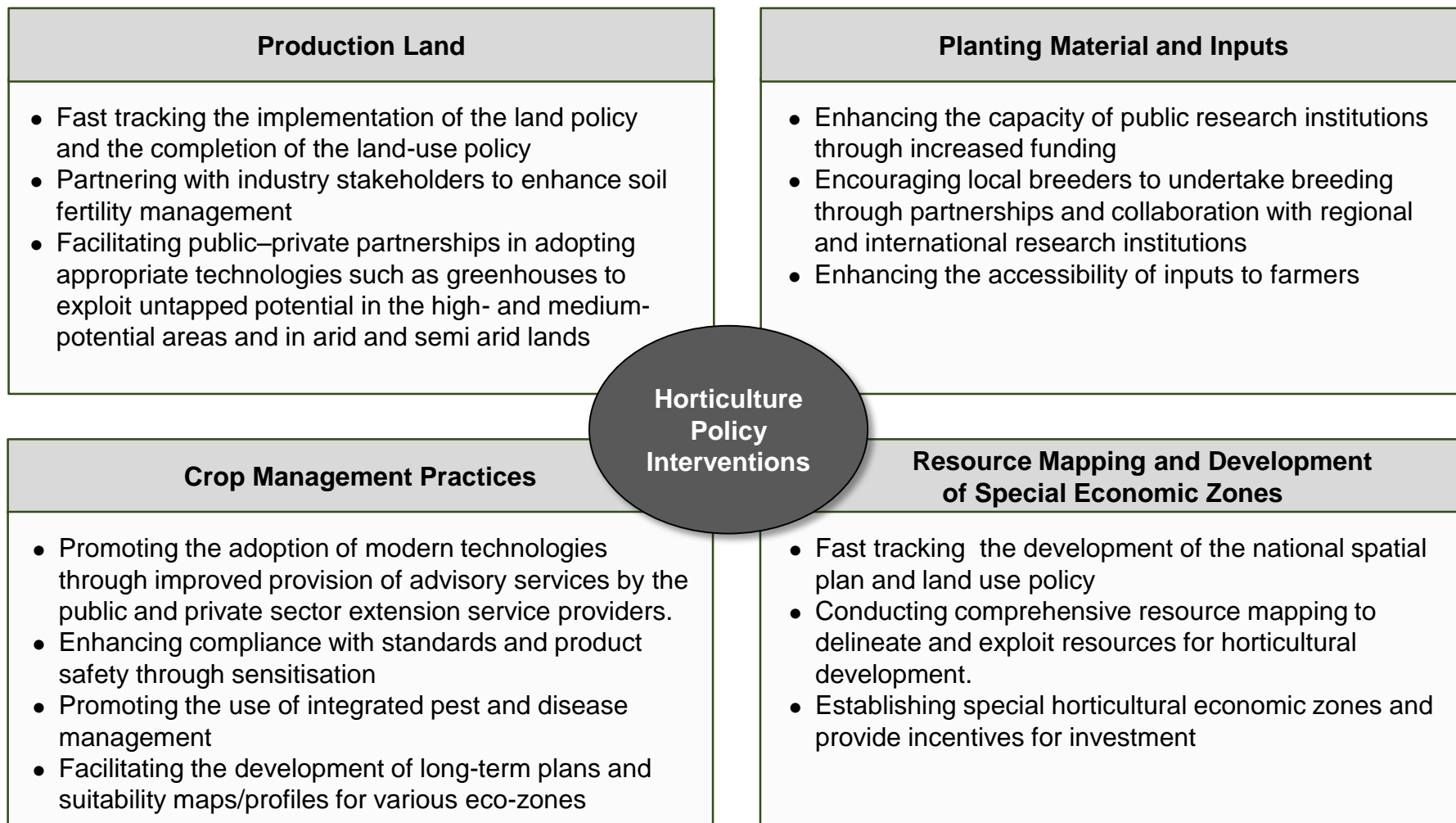
- Coordinates activities of the several Ministries and other stakeholders that are engaged in the agricultural sector and helps provide a **“one-stop shop” for agricultural activities**

Note: ¹ ASCU self defines their role as a one-stop shop for agricultural business and reform.

Source: Interviews with the Ministry of Agriculture, Ministry of Lands, Ministry of Roads, Ministry of Transportation, Horticultural Crops Development Authority, Kenya Agricultural Research Institute, and Agricultural Sector Coordination Unit

Policy Reforms to Enhance Horticulture Production

The Government of Kenya is implementing a number of policy reforms to create an enabling environment for competitive horticultural production





To create a favourable environment for investors, the Kenyan Government is considering several interventions to drive and encourage investment in mangoes

Existing Initiatives

- To **create an attractive business environment**, the Government of Kenya has implemented a number of strategies, including:
 - Increasing the country's political stability through more **equitable land distribution**
 - Prioritising the **construction and development of roads** in the Tana River Delta to facilitate more cost-effective transportation
 - **Conducting a suitability assessment** on the irrigation potential in the Tana River Delta to aid in future planning of cultivation
 - Reducing import tariffs, revoking export duties, and simplifying business license through the **Investment Promotion Act of 2004**

Further Considerations

- To **facilitate this mango production investment**, the Government of Kenya is considering the following strategies:
 - **Aiding in the land acquisition** process to assure the investor seven 50 Ha plots of land
 - Supporting the **community sensitisation process** to enable the investor to help assist in the recruitment of smallholder farmers into the outgrower scheme
 - Engaging with discussions with the Treasury to provide investors **with tax holidays on revenue** and continuing to provide **a tax break** on capital investments
 - Working with the Kenya Road Authority to discuss **high priority rural roads** and create a plan for adequate maintenance



Abbreviations and Acronyms

ASCU	Agricultural Sector Coordination Unit
Bn	Billion
CAGR	Compound Annual Growth Rate
COGS	Cost of Goods Sold
EAC	East African Community
EBITDA	Earnings Before Interest, Taxes, Depreciation, and Amortization
FAO	Food and Agriculture Organization
FAOSTAT	Food and Agriculture Organization Corporate Statistical Database
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GoK	Government of Kenya
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (the German Society for International Cooperation)
ha	Hectare
HCDA	Horticultural Crops Development Authority
IRR	Internal Rate of Return

KARI	Kenyan Agricultural Research Institute
kg	Kilogram
M	Million
MT	Metric Ton
NPV	Net Present Value
ROIC	Return On Invested Capital
SG&A	Selling, General, and Administrative Costs
USAID	United States Agency for International Development
USD	US Dollar