



# THE KENYAN FLORICULTURE SECTOR 2024

A Review of Floriculture  
Sector in Kenya







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# Executive Summary

Kenya's thriving economy, with a GDP of more than \$100 billion, is underpinned by agricultural strength, particularly the horticulture and floriculture subsectors. The latter sector in particular contributes about \$1 billion annually and is a major employer with more than half a million Kenyans. This robust sector has revitalized regions like Naivasha and transformed them from quiet areas into bustling urban centers. While the floriculture sector has been a huge contributor to employment and community development, it faces challenges such as rising input costs and global market pressures. Nevertheless, its transformative impact on Kenya's socioeconomic fabric remains undeniable.

Kenyan flower farms have made huge positive strides toward the holistic well-being of their employees. Investments in healthcare infrastructure, such as on-site clinics and health campaigns, are prominent, alongside a growing focus on mental health and counseling services. Employees enjoy a range of benefits, from basic necessities

to opportunities for career and personal growth, with initiatives driven by regular feedback sessions. This commitment to wellness is reflected in high employee satisfaction, compounded by consistent employment even during challenges such as the COVID-19 pandemic. In addition to their economic contributions, these farms have a major impact on local communities through infrastructure development, job creation and broad CSR initiatives, making Kenya's ornamental horticulture sector a beacon of growth and prosperity for the community.

Rising global temperatures are affecting Kenya, bringing clear challenges for flower farms. These farms face long droughts causing water shortages, more pests, and higher energy costs. Farms are acknowledging these threats and implementing mitigation initiatives at the farm. On top of these problems, farms are feeling the push to be more sustainable because of customer demands and strict rules. Seeing these changes, many Kenyan flower farms are moving towards being more sustainable, looking into initiatives like solar energy, not only for the environment but also as a smart business decision.

The flower industry in Kenya faces challenges from both local rules and international standards. Currently, local taxes and red tape have made doing business tough and costly. Add to that, international restrictions, especially from Europe, on things like chemical use have raised production costs. Looking ahead, it seems Europe will have even stricter rules, which could mean more challenges for Kenyan flower farms. To stay ahead, these farms should think about locking in sales and prices in advance, trying out different flower types, selling to new markets outside Europe, and looking into products like dried flowers or oils. These strategies can help farms navigate challenges and find new opportunities.



The floriculture sector in Kenya faces a myriad of challenges, including market fluctuations, consumer demand shifts, and economic uncertainties. Government policies, such as changing tax laws and potential political instability, also pose risks to the industry. Furthermore, as climate change progresses, farms confront environmental threats like water scarcity, extreme weather, and temperature changes. However, there are various strategies in place to manage these risks, ranging from diversifying product portfolios and markets to implementing sustainable technologies and insurances. These proactive measures aim to ensure the sector's continued growth and resilience.

A proposed management tool aims to offer insights into farm operations using data analytics, comparing them to market averages. This tool will focus on promoting sustainable farming practices, addressing the financial health of farms, and emphasizing employee well-being and community engagement. It will leverage data from existing KFC audits and cover areas such as carbon emissions, market pricing, and health and safety protocols.





# Introduction

The Financial Study Association Amsterdam (FSA) annually organizes its Research Project, in which a committee of 18 highly qualified and motivated students conduct strategy consulting work. These students are selected through a rigorous process that takes into account their personal characteristics, academic achievements, and analytical skills. In cooperation with leading consultancy firms, the FSA Research team delivers tailor-made professional consultancy services and research reports for international companies.

The Kenya Flower Council, as a representative body for the floriculture sector in Kenya, recognizes the need to showcase the contribution of the floriculture industry in Kenya to the overall Kenyan economy and its communities. To fulfill this purpose, the council has commissioned a comprehensive report that aims to provide a detailed assessment of the sector's performance, while also collecting valuable data to support farmers in their business maintenance and development.

This research endeavor delves into uncharted data, focusing on the often-overlooked relationship between the floriculture sector and its surrounding communities. By exploring the social and economic impact on these communities, the report aims to provide a holistic view of the sector's influence and foster a deeper understanding of its effects beyond the industry itself.

The Kenya Flower Council is committed to promoting sustainable practices and ensuring the well-being of both the sector and the communities it operates in. By gathering relevant data and insights through interviews with flower farms, this report aims to inform decision-making, facilitate policy formulation, and contribute to the council's efforts in creating a resilient, socially responsible, and environmentally conscious









01

# Economy Assessment





## Economic impact floriculture sector

### 1.1

In 2020, the COVID-19 pandemic had a significant impact on the economy, causing disruptions in international trade, transport, tourism and urban services. However, the agriculture sector, a crucial part of the economy, remained resilient and played a crucial role in limiting the contraction in GDP, which was limited to just 0.3% that year. Fortunately, the economy experienced a strong recovery in 2021, with growth of 7.5%. Although certain sectors such as tourism continued to face challenges, overall economic performance was strong. Looking ahead, a 5.5% GDP growth is expected in 2023. On a positive note, the poverty rate, which had initially risen during the pandemic, is showing signs of declining, showing that the country has made progress in addressing poverty (World Bank, 2023). With a gross domestic product of more than \$100 billion, Kenya has recently achieved the status of a lower middle-income country. This remarkable achievement reflects the nation's ability to cultivate a diverse and vibrant economy. Additionally, its strategic location serves as an entrance to the expansive East African market, providing access to a huge consumer base of about 300 million people (Usaid, 2023).

A central part of the Kenyan economy is the agricultural sector, which accounts for about 33% of the country's GDP. In particular, this sector is a major source of employment for more than 40% of the total population and an impressive 70% of the rural population (Usaid, 2023). Of the numerous subsectors, horticulture is a major contributor to foreign exchange, with annual sales of about \$1 billion and 1.25% of the national GDP. In 2021, floriculture alone generated about 809 million USD, contributing nearly 1% to GDP. By 2021, Kenya had risen to become the fourth largest exporter of cut flowers in the world, with exports worth \$766 million. To highlight its substantial contribution to international trade, cut flowers became Kenya's second most important export product. Major importers of Kenyan flowers include the Netherlands (\$322 million), the United Kingdom (\$147 million), Germany (\$38.9 million), Russia (\$33.4 million) and Saudi Arabia (\$32.9 million) (OEC, 2023). In fact, Kenya is the largest cut flower producer on the African continent and the third largest producer of flowers worldwide (Thursd, 2023).

## Employment

### 1.1.1

The floriculture sector in Kenya not only contributes significantly to the nation's economic development but also plays a major role in shaping employment demographics. The floriculture sector is a prominent source of employment across Kenya, providing jobs in for a diverse workforce. There are about 220 flower farms located in Kenya, each employing hundreds of people. According to reports, more than 500,000 Kenyans, including 100,000 flower farm workers, depend on this sector, which in turn positively

impacts the livelihoods of more than 2 million people (news.africa-business.com). As many flower farms are often located in rural areas, which have historically faced employment challenges. The presence of the sector in these regions has changed living conditions by creating numerous employment opportunities, addressing rural-urban migration and promoting basic economic development. In addition, the sector has made significant progress in promoting gender diversity in the workplace.

The sector employs a significant number of women in various positions ranging from greenhouse workers to management positions, thereby enhancing and improving the status of women in these communities. As the sector continues to grow, it has helped develop a skilled and specialized workforce. Employees receive training in various aspects of floriculture, logistics and management, which enhances their skills and employability.

## Export and foreign exchange

### 1.1.2

Kenya's economy is firmly rooted in agriculture, with floriculture taking a prominent place. The sector has become one of the country's main sources of foreign income, serving a wide audience by exporting Kenyan flowers to more than 60 countries. The importance of this division is underscored by recent financial data. In 2021, sales of the horticulture segment increased by five percent to 157 billion KSh. Such a jump underscores horticulture's leading position as the country's main source of foreign earnings. In 2020, revenues reached 150 billion KSh (HortiDaily, 2022).



In 2021, the sales of horticulture increased by 5% to 175 billion

The cut flower segment is the largest contributor to this growth. In addition to these direct revenues, the sector also affects the exchange rate. These spillovers are not only related to economics; they play a central role in national governance and economic strategy. When farmers export their flowers, the transactions take place mainly in strong world currencies such as euros or dollars. However, their operational expenses, ranging from wages to supplies, require Kenyan Shillings.

This dynamic provides a lucrative opportunity for foreign currency exchange and provides the government with a reliable and consistent flow of foreign currency, which is vital for stabilizing and strengthening the country's economic landscape.

## Taxes

### 1.1.3

The floriculture sector in Kenya is a vital contributor to the country's economic growth and stability. This sector is not only a vital source of employment and foreign exchange earnings, but also plays an important role in supporting government revenue through various channels. One of the main ways the floriculture sector contributes to government revenues is through taxes. Floriculture and related businesses are subject to various taxes, including income tax, corporate income tax, value-added tax (VAT) and customs duties. These are some important aspects of revenue generation:

- **Corporate Income Tax:** flower farms operating in Kenya are required to pay corporate income tax on their profits. The steady growth of the floriculture sector has translated into increased taxable income, resulting in a substantial contribution to government revenue.
- **Value-Added Tax (VAT):** VAT is a significant source of government income from the sector. Flower farms typically charge VAT on their products, which is collected and remitted to the government. The sector's export-oriented nature ensures that a significant portion of VAT collected is in foreign currency, adding to the country's foreign exchange reserves.
- **Customs Duties:** the floriculture sector heavily relies on the import of equipment, machinery, and inputs. Customs duties imposed on these imports contribute to government revenue. As the sector expands, the volume of imports subject to these duties increases, further augmenting government income.

As stated above, the floriculture sector is a substantial employer in Kenya, providing jobs to a diverse workforce. The income earned by employees in the sector contributes to personal income tax collections. The growth of employment opportunities in the sector has led to an expanded tax base, positively impacting government income.

The table showing the tax contributions of the floriculture sector in Kenya for the year 2022 shows the significant economic impact of this sector. The data summarizes the total taxes paid by the entire sector, calculated based on revenues from a sample of different flower farms and the associated taxes. This comprehensive assessment covers several tax categories:

- **Corporate tax:** The flower nursery sector contributed a substantial amount of KES 653,131,321.51 in corporate tax, indicating the profitability of the sector and its substantial role in the country's corporate tax base.
- **Customs duties:** The sector also contributed KES 14,987,399.43 in customs duties.

This figure reflects the sector's involvement in international trade, as customs duties are usually levied on goods imported or exported.

- **Local levies:** Local levies amounted to KES 191,390,996.02, demonstrating the sector's contribution to local government revenue. These levies often fund local infrastructure, services and community development, highlighting the sector's role in supporting local economies.
- **Indirect taxes:** Indirect taxes paid by the sector, totalling KES 24,714,776.79, include taxes such as sales tax or VAT, which are passed on to consumers. This reflects the size of the sector in the market and its interaction with the broader consumer base.

The total tax contribution of the floriculture sector was KES 884,224,493.75. This significant figure underlines the role of the floriculture sector as a major economic player in Kenya, contributing to the national treasury through various forms of taxation.

The importance of the flower sector in the Kenyan economy is clear: it is increasingly overshadowing other industries and is becoming the main sector responsible for the growth of Kenya's gross domestic product. The sector plays a crucial role in generating hundreds of thousands of jobs along the value chain and contributes to the socio-economic development of the country (Thursd, 2023). In short, Kenya's floriculture sector is not just a thriving industry; it is an economic powerhouse. The sector fuels the country's foreign exchange reservoir, supports economic stability and provides the government with the fiscal strength and flexibility it needs to hold its own in the global economic arena.

Full Sector Tax Impact (KES)	
Corporate Tax	653,131,321.51
Customs Duties	14,987,399.43
Local Levies	191,390,996.02
Indirect Taxes	24,714,776.79
<b>Total</b>	<b>884,224,493.75</b>

Table 1: Total tax contribution of the floriculture sector calculated by scaling the tax contribution of sample farms with the total revenue of the sector for FY2022.



## Economic contribution to the communities

### 1.2

The floriculture sector in Kenya extends beyond its overall economic impact and also plays an important role in the economic and social fabric of the many communities surrounding the farms. The sector contributes to local community development by creating employment opportunities and supporting businesses around. An in-depth analysis of anonymized data from various flower farms in the region reveals the multifaceted benefits and improvements that can be attributed to the presence of this sector and its involvement in the surrounding communities.

### Job creation

#### 1.2.1

The floriculture industry has created an enormous amount of job opportunities. The floriculture industry alone is a huge employer, with most farms employing hundreds of people directly. Indirectly, the number of beneficiaries is estimated to be nearly five times the size of the direct labor force, including other shops and businesses in the communities. This widespread impact creates economic ripples that spill over to various sectors, such as real estate and other businesses.

The sector employs people with different educational backgrounds, but mostly employs unskilled workers. The sector shows a diverse workforce, with the farms valuing the contributions of each worker by investing in their development. The unskilled workers are often eager to learn and are trained and educated by the company in different roles. In this way, they acquire a spectrum of skills and become more proficient, enhancing their personal growth, but also fueling Kenya's overall economic engine by strengthening the country's skilled workforce. Additionally, the floriculture sector also promotes more gender equality by having a significant number of women working on these farms, promoting a more just community.

Another notable initiative by the farms to invest in the surrounding communities is providing interest loans to workers. These loans act as a lifeline allowing individuals to fulfill responsibilities like paying for their children's education. As money circulates in these communities through these loans there is a boost in activity and vitality.

Another initiative implemented by a few farms is fostering financial literacy to workers, some particularly to women. This way, they educate them about the role of money, focusing on empowerment. And recognizing the unique challenges faced by women with children, the farms go a step further by offering day care. This allows women with children to simply focus themselves to their work instead of having to care for children at home. Make a meaningful contribution to both the farm and their families.

## Growing Communities

### 1.2.2

Communities within reach of these farms have seen a remarkable increase in disposable income, tangible evidence of economic improvement. There has been a remarkable increase in disposable income, which has enabled the improvement of housing standards and the diversification of local business activities. Farm workers have established numerous side businesses, from home rentals to local stores, boosting the local economy. In addition, people built their own homes and brought the skills they gained while working to their communities. Some regions, once small and underdeveloped, have experienced explosive growth and turned into bustling urban centers. For example, the communities surrounding Naivasha. In the 1970s about 5,000 people lived here; now 500 thousand people depend entirely on the cultivation of vegetables and flowers here. This transformation was supported by the influx of workers, which then led to thriving commercial activities and the emergence of entrepreneurial businesses.

Moreover, there has been a notable appreciation in land value in regions where the farms are located. For instance, around some farms the value of land saw an increase from thousands per plot to millions of Kenyan Shillings since the farm has been operating, signaling a positive impact on local property markets and investments.

**KES 884,224,493.75**

The total tax contribution of the floriculture sector in the year 2023

This tangible increase not only increased the financial wealth of landowners but also unleashed a wave of outside investment, particularly in real estate. Since the government looks for economic gain, the densification of the population brought about by the farms has enabled governmental intervention in terms of road construction, public transportation, electrification, and provision of other essential utilities. In addition to government efforts, farms themselves have actively contributed to infrastructure development, including maintaining and improving roads, setting up water towers and improving local security.

In addition, many farms also recognize their ecological responsibility and have started planting trees, which is not only good for the environment, but also improves the quality of life of local people by reducing wind and dust.

### **Education and health**

#### **1.2.3**

Education, a keystone of community development, features prominently on the sector's agenda. Farms proactively invest in educational infrastructure, including building classrooms and providing furniture for local elementary schools. One farm in particular also sponsors the education of exceptional students, demonstrating commitment to nurturing talent. At the same time, health care institutions have also benefited from its presence, thanks to an increased number of patients with health insurance through their farm, improving the financial sustainability of local medical institutions. Some farms are even actively involved in improving emergency medical services by contributing vehicles and equipment, further underscoring the sector's unwavering commitment to the health and well-being of the community. Additionally, many farms are members of Fair Trade, which means returning a portion of their sales premiums to the community. This has enabled the sector to invest in community initiatives, such as building schools, providing access to clean water and subsidizing food, thereby improving living standards and overall well-being.

### **Community engagement**

#### **1.2.4**

The relationship between farms and communities is of great value. Farms often provide essential resources such as food and water to local people. Resource centers built by the farms offer courses and training, further integrating the farms into the fabric of the communities. Farms often allocate specific budgets for community projects, sometimes upwards of thousands of dollars per year, underscoring their commitment to the welfare of surrounding regions. Overall, we can conclude that the presence of the farms has led to higher disposable income, better living standards and an overall improvement in the quality of life for people in these surrounding vibrant communities. More on this will be elaborated in the social assessment.

### **Flower industry spill over effects**

#### **1.3**

The financial impact of the flower industry in Kenya has been thoroughly examined, taking into account spillovers to other sectors in terms of revenue. It is clear that while this sector has a significant impact on the Kenyan economy, certain factors, including input imports, moderate the magnitude of spillovers. The flower industry in Kenya has received international recognition for its significant contributions to export earnings and employment generation. However, it is important to note that a significant portion of the inputs required for floriculture in Kenya, such as fertilizers, pesticides and greenhouse equipment, are imported from abroad. This reliance on imported inputs somewhat limits the direct economic impact of the flower sector on the domestic economy.

### **Logistics and transportation**

#### **1.3.1**

Nevertheless, the flower industry has indirectly contributed to the growth of several sectors in Kenya. Input imports have led to opportunities for companies in the logistics and transportation sector. Companies involved in the transportation and distribution of these imported products have grown due to the demand generated by the flower industry. Transportation companies, shipping agents and warehousing companies have seen their revenues increase, leading to new jobs and investments in transportation infrastructure.

### **Agriculture business**

#### **1.3.2**

Despite the import of many inputs, demand for local agricultural support services remains in Kenya. Services related to flower cultivation have grown somewhat due to their association with the flower industry. Local businesses offering these services have grown, which has helped create jobs and increased economic activity. Additionally, the success of the flower industry has also inspired entrepreneurship in related agro-industries. Some Kenyan entrepreneurs have set up businesses in greenhouse technology and agricultural consulting and to support the flower industry. These emerging businesses not only contribute to economic diversification but also create jobs.

### **Innovation and research**

#### **1.3.3**

A notable aspect of the flower industry's impact on Kenya is its commitment to quality and sustainability. This commitment has led to increased investment in research and innovation. While not directly visible in financial terms, this indirectly benefits research institutions and universities in Kenya by providing funding and collaborative opportunities in agricultural technology, environmental sustainability and horticultural research.

### **Job Creation**

#### **1.3.4**

Floriculture is a labor-intensive sector that employs a significant number of workers in Kenya. In addition to direct employment on flower farms, the growth of the sector has stimulated the emergence of support businesses. Suppliers of fertilizers, chemicals, packaging and logistics have grown alongside the flower industry and created employment opportunities. However, it is essential to recognize that spillover effects are somewhat limited in these areas due to the importation of many agricultural inputs.

In conclusion, although the spillover effects of Kenya's flower industry may not be as



### Job Creation (Continued)

#### 1.3.4

extensive as in some other sectors, it undeniably plays a central role in the country's economy. The growth and international competitiveness of the flower industry has created opportunities for specific domestic businesses and sectors, contributing to economic diversification and job creation. To further enhance its positive impact, Kenya should explore strategies to strengthen the local value chain, reduce dependence on inputs and encourage more domestic linkages within the flower sector.

confidential interviews with flower farms. We provide a comprehensive overview of the challenges these companies face and the strategic measures they are implementing to weather the storm of inflation.

### Effect of Inflation

#### 1.4

Kenya's floriculture sector, a vital contributor to the country's economic growth, has long bloomed with vitality. However, like all sectors, it is not immune to the pervasive effects of inflation, which have led to a host of challenges. Inflation is a pervasive economic challenge that casts a significant shadow over various sectors. This report examines the impact of inflation in Kenya's floriculture sector and offers insights from confidential interviews with flower farms. We provide a comprehensive overview of the challenges these companies face and the strategic measures they are implementing to weather the storm of inflation.

### Escalating procurement costs

#### 1.4.1

Within the floriculture sector, we are seeing a consistent increase in procurement costs, especially for essential commodities like fertilizers, chemicals and packaging materials – integral parts of the flower growing process. The prices of these essential inputs have increased due to inflation, straining the operational budgets of flower farms, forcing them to seek creative solutions. The depreciation of the Kenyan Shilling (KES) further compounds this issue by making imported goods even more expensive.

### Rising labor costs

#### 1.4.2

Concurrently, labor costs are on the rise, primarily driven by increased living expenses and higher National Social Security Fund (NSSF) contribution requirements. The rise in NSSF contribution requirements has led to a notable increase in labor costs, affecting both employers and employees. As a direct consequence, employees have experienced a reduction in their take-home salaries. This decline in income is particularly significant given the backdrop of rising consumable costs due to inflation. Employees are left with substantially less disposable income, raising concerns about the potential impact on their productivity and overall well-being. Many farms do their best to conduct annual salary reviews, adjusting wage structures upward to meet the needs of their staff. This

increase in labor costs exacerbates operational expenses. Inflation-induced financial stress is a common theme among staff. Workers struggle with the challenge of meeting their basic needs while the cost of living increases. These financial pressures can manifest themselves in absenteeism and reduced productivity, posing additional challenges for flower farms seeking to maintain efficient and productive operations. These labor-related challenges underscore the complex interplay between inflation and workforce dynamics within the floriculture sector. Addressing these concerns is vital to ensuring the financial stability of employees and sustaining overall productivity within the industry.

### Rising freight costs

#### 1.4.3

Transportation costs, particularly for air freight, have increased markedly. The origins of this escalation can be traced to the far-reaching effects of the COVID-19 pandemic, geopolitical uncertainties and the relentless rise in global fuel prices. In addition, local fuel prices increased significantly following the collapse of the fuel subsidy system,



**Currency**

The devaluation of the Kenyan Shilling against the U.S. dollar has significantly impacted the industry, with this phenomenon affecting both production and export costs.

**Declining Demand**

These inflationary challenges are exacerbated by the declining demand for flowers. This decline in demand is directly attributed to global economic inflation, which subsequently affects consumer purchasing power. As highlighted in a study by McKinsey & Company (Moulton et al., 2023), European consumers are tightening their belts in several spending categories. While spending on essentials such as food remains relatively stable, discretionary spending, including flowers, is being hit hardest by budget cuts. With the European market being one of the main pillars of the industry, this drop in demand requires extensive revisions in pricing and marketing strategies for floral growers to remain competitive in this dynamic and challenging landscape.

**Stagnant prices and shrinking profit margins**

**1.4.7**

The confluence of these factors creates an environment characterized by rising operating costs due to global inflation. Paradoxically, flower prices remain static, largely due to fierce market competition and the industry's inability to pass the burden of these additional costs onto consumers. This situation has led to a stagnation in prices, adding to the challenge of escalating costs and ultimately resulting in smaller profit margins for a significant number of flower farms. In response to this situation, several farms are taking various cost control measures or considering alternative strategies, such as increasing production volumes to reduce cost per stem.

In conclusion, the floriculture sector in Kenya is at a critical juncture as it navigates through a multifaceted inflationary crisis. While this challenge is undeniably discouraging, it simultaneously presents opportunities for innovative strategies and resilience. By taking advantage of these opportunities, the sector can navigate these turbulent waters and emerge stronger and more flexible in the post-inflation landscape.







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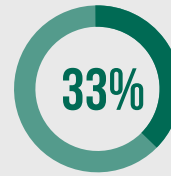
**Kenya's Flourishing Floriculture  
Sector: Economic Impact  
and Growth**





### GDP AND Agriculture

**100B** KENYA'S GDP:  
100 BILLION



AGRICULTURE SECTOR  
CONTRIBUTES 33%  
OF GDP

**\$1B** FLORICULTURE SECTOR  
CONTRIBUTES \$1BILLION  
ANNUALLY

### Employment Impact:

 **500K** TOTAL EMPLOYMENT:  
500,000 PEOPLE

 **2M** BENEFICIARIES: 2 MILLION  
(INCLUDING RURAL AREAS)

### Economic Benefits:

**884M** TAX CONTRIBUTIONS:  
884 MILLION



COMMUNITY GROWTH: URBANIZATION,  
INFRASTRUCTURE DEVELOPMENT,

### Community Investments:



EDUCATION AND HEALTH:  
INVESTMENT IN LOCAL SCHOOLS  
AND HEALTHCARE



ESSENTIALS PROVIDED: FOOD,  
WATER, COMMUNITY RESOURCE  
CENTERS

**02**

# **Social Assessment**





## Healthcare

### Healthcare provision and accessibility

Kenya, as an emerging economy, has recognized the critical need to offer healthcare coverage for its citizens. Central to this mission is the National Health Insurance Fund (NHIF), a government run organization, which represents the Kenyan government's commitment to ensuring that every citizen has access to affordable healthcare services, irrespective of their socio-economic status. As estimated, over 8 million Kenyans lived in extreme poverty in 2022. A significant portion of this group lives in rural, more secluded areas.

The NHIF, over the years, has undergone various reforms to broaden its scope and inclusivity. Per the most recent development, as of July 2023, the government contribution to the NHIF was increased, making healthcare more affordable and thus accessible for all Kenyans. Additionally, employers must now remit 2.75% of an employee's monthly gross salary with the purpose of covering the NHIF rate. The basis rate went down from 500 KSh to 300 KSh per month for the lowest incomes, volunteers and the self-employed. As NHIF rates are based on income, those with a lower income can see their monthly NHIF payments go down by as much as 46%, making healthcare not only more accessible, but more sustainable.

NHIF's primary function is to provide health insurance to Kenyans over the age of 18, offering them a safety net against the often high costs of medical services. This includes both in-patient and out-patient services, with the inclusion of specialized services in some of its packages. Not only does the insurance cover the insurance taker, it also covers one spouse and up to five children. One can submit a confirmation of relatedness and extend the coverage to direct family members.

Parallely, Kenya's labor laws have evolved to be in consonance with its broader healthcare objectives. The Employment Act and the Occupational Safety and Health Act (OSHA) are significant developments that define the relationship between employers and employees, particularly concerning healthcare. Employers are mandated to ensure a safe working environment and, in specific sectors, to provide medical allowances or facilities for their workers. The synergies between these labor laws and the NHIF Act create a more controlled and trustworthy environment for Kenyan workers.

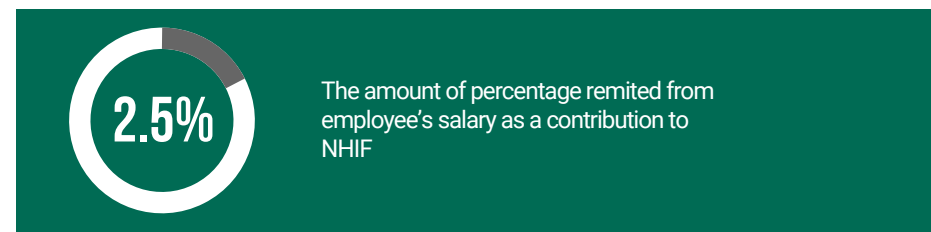
Visits to Kenyan flower farms have provided insights into the practical implementations of both the NHIF act and its developments, and the labor laws concerning a safe working environment and the use of personal protective equipment (PPE). Interviews with Human

### 2.1.1

Resources Management and employees of the farms presented considerable insights into the purposive use of health and safety regulations and concerns on the farms. Several segments of healthcare services were identified, which will be discussed in the remainder of this section.

#### On-Site Clinics and Services

Interviews with the HR management of the farms in our studies showed that the majority of the flower farms visited have on-site clinics operating in the Level 2 of the Kenyan healthcare facility assessment. These clinics are equipped to provide basic medical services to employees, often including medicines, operating as a health clinic exempting only in-patient treatments. Standardly present at these clinics are qualified nurses who can aid the employees in basic medical needs and assist with injuries and pain. Workers have confirmed that their families can also receive medical treatment. However, these costs are deducted from the employee's salary. Additionally, employees have reported regular visits from medical doctors who supplement the efforts of clinical officers on-site. Some farms reported complementary services in maternal care. Many farms emphasized the importance of gynecology and maternity-specialized care in their farms concerning the new and expectant mothers under their employment. For specialized treatments, employees are referred to nearby hospitals. Farms in this study indicated to spend an average of over 1.7 million KES yearly on this onsite clinic.



During focus groups, another crucial aspect of on-site care was discussed, the presence of first aiders throughout the company was a common practice. Each department has first aiders present and trained to deal with injuries at a quick pace. First aid personnel present on working grounds ensure immediate care is given before transferring an injured worker to a clinic or hospital. Health and safety committees consisting of workers volunteering to contribute to the regulations at the farms and the communications of needs with management ensure these systems are held in place and followed. In case of discrepancies a monthly health and safety meeting allows the committee to come forward with concerns, which are then addressed by management.

### **External healthcare access**

While on-site clinics provide immediate and basic care, they often collaborate with external healthcare facilities, such as hospitals, for specialized services. These external facilities range from nearby health centers located within a few hundred meters to hospitals located about 20km away. Once established that the on-site clinic was not sufficient in care facilities for the need of an employee, a hospital referral is given, and the employee is provided the opportunity to travel to the hospital and receive the appropriate care. Transportation to these facilities is often provided free of charge, especially in cases where immediate medical attention is required. Hospitals are utilized by a vast majority (around 90%) of employees and their families. Participating farms indicated that the average yearly spend on providing employees with external healthcare coverage and provisions was around 60 million KES.

In cases where the farm does not have an on-site clinic available for its employees, ties with the local hospitals were indicated to be strong, as dependence on the hospital for all medical care of farm employees is large. Alternatively, farms lacking an on-site clinic themselves showed great collaboration with farms in the area that did provide on-site care. Often farms worked together in providing basic care and employees of the unprovided farm were welcome to make use of the clinic elsewhere. Transport was then provided.

### **Information and awareness**

During visits several farms indicated an interest in educating their employees and spreading awareness of important health issues and preventative measures, not only within their farms but also in the local community. Special attention was brought to the awareness of HIV/AIDS, and the past issue of Covid-19 spreading. Farms that showed a high interest in the communities were prevalently reporting their commitment to educating people about the source, prevention and containment of several transmissible diseases that continue to cause health concerns within the country.

Another important measure farms are taking to educate their employees and the communities are several informational initiatives on nutrition and malnourishment. Farms that work closely with their local hospitals emphasized the need and presence of a nutritionist in the community, to inform and aid especially new parents on the importance of correct nutrition.

### **Health insurance**

All employees are mandatorily covered under the National Health Insurance Fund (NHIF),

connoting that all employees at the flower farms have basic health insurance for themselves and beneficiaries. The insurance coverage combines the basic package offered by the government with additional provisions from the flower farms. In situations where NHIF does not provide coverage for a service needed, farms step in to assist, often with medical cover that varies in amount. Aside from these additional covers, farms often offered interest-free loans through a Savings And Credit Co-Operative (SACCO), which provides employees with the ability to cover services that are not included in the NHIF package as is. Employees at FLO certified farms can use grants provided by Fairtrade to cover medical expenses.

# 60M

The amount of money spent by participating farms to provide external healthcare coverage to their employees

### **Preventative measures and safe working environment**

A hazard that is often identified within the floriculture sector and any other agricultural business, is the protection of employees' safety around chemicals and equipment. As the floriculture industry has very strict export regulations concerning the presence of insects in their export products, the use of chemicals and pesticides forms a large concern and point of attention for the industry. Because of this, not only is the use of pesticides common and widespread, but the use is also highly regulated and controlled by the farms. Several measures are taken to counter any side effects from chemical usage. Personal Protective Equipment is available at every farm visited, and often renewed yearly. Older clothing can be worn by choice, but the essentials of the protective armor are replaced when needed, and the use is monitored by the farms. Additionally, there are regulations in place that prohibit the entry into greenhouses where chemicals have been sprayed within a designated time period. These measures were regulated very strictly and taken seriously by all farms in this study.

Employees confirmed the emphasis on safety measures during the focus group discussions, as they indicated safety was a top priority on the farms. Incidents were deemed rare because workers dealing with chemicals receive the appropriate PPE, and training. Training was indicated to be a core part of their safety protocol. Workers receive training on first aid, safety issues, and handling chemicals. For example, one employee from the spraying department emphasized the thoroughness of PPE training and its importance to the farm, stating that there had never been an issue regarding safety



Additionally, a unique practice in the spraying department involves rotating employees every three months to allow them a recovery period from the constant exposure to chemicals, as put forward by an employee from the spraying department at one of the farms. If an employee faces health concerns during these periods though, either physical or mental, due to their current role, they can request a department transfer. Such requests are taken seriously, ensuring the well-being of the worker. Consequently, health concerns while working in the spraying department can be met by a transfer in departments. As indicated by employees, this rarely happens and incidents due to chemical usage are extremely rare due to the information and protection provided to employees. Another employee brought up that an 'injury book' keeps track of all injuries, ensuring a recorded history of incidents and the subsequent care provided.

### ***Sick Days and Leave***

As part of the Collective Bargaining Agreement (CBA), employees undergo a rotation of 53 days with full pay, followed by 55 days with half pay, and subsequently, a period without pay. Sick leave policies differ between permanent and seasonal workers: permanent employees are entitled to 53 days of full pay and 55 days of half pay annually, while seasonal workers receive 7 days of full pay and 7 days of half pay. To be eligible for sick leave, a qualified doctor must verify the illness.

### **Challenges in healthcare provisions**

#### **Coverage Limitations**

NHIF's scope is limited in several areas. It does not cater to optical and dental care, leading organizations to provide supplementary covers. However, even these supplementary covers are sometimes inadequate, especially for chronic diseases and certain scans or tests. This inadequacy occasionally forces employees to bear some of the medical costs, which are often too high relative to their income, leaving them in distress. Conversations with employees have shown that concerns of expensive medicine and additional treatment leave workers unable to pursue the necessary care.

#### **External Healthcare Dependencies**

Given the basic facilities of on-site clinics, there is heavy dependency on external healthcare institutions. Travel to these institutions, especially during emergencies, has been cited as a concern by both management and employees. Employees often indicated during focus group discussions that infrastructure improvements, such as fixing the roads leading to the health center, were an important point of improvement. Bad roads, especially during the rainy season, make it challenging to reach the health center. Additionally, the choice between private and government hospitals poses a dilemma.

Private hospitals offer better care, but they are more expensive and often not covered by NHIF. Public hospitals were reported to often have long waiting times for treatments and offer inferior quality care compared to private hospitals. This leads to higher out-of-pocket expenses for employees, which they often cannot afford.

#### **Infrastructure and Facility Limitations**

Some of the on-site clinics are small and require expansion. Areas like maternity care need special attention. The fact that certain farms do not have an on-site clinic, but instead rely on a standby doctor or other farms' facilities, indicates room for additional improvement in healthcare infrastructure.

### **Positive outcomes and additional support**

#### **Improvement in General Health**

With the introduction of on-site clinics and other health benefits, a noticeable improvement in employees' health has been reported. Check-ups at the clinic and the ability to receive care on the farm site have been positively noted by employees. Most employees indicated they were satisfied with the care provided at the farm site, and many reported having visited the nurse themselves.

#### **Broader Community Impact**

The presence of the floriculture industry has boosted the local healthcare system. The emergence of private hospitals has reduced dependency on government hospitals. Farms with robust on-site medical facilities also offer services to local communities, sometimes for a fee. This has created a relationship where the community benefits from the infrastructure brought about by the flower farms, and the flower farms in turn benefit from the community.

#### **Mental Health and Other Support Systems**

Some farms have started focusing on mental health, providing counseling services not just to employees but also to the community at large. Employees at farms largely indicated the need for more focus on mental health initiatives at farms as part of the healthcare provision. Many farms are picking this up and have counselors in place or are starting initiatives in this area.

On the community front, initiatives such as orphanages funded by the farm underscore the broader impact and commitment of the flower farms.

Based on the comprehensive evaluation of healthcare provisions and accessibility in Kenyan flower farms, the following conclusions and recommendations can be made:

## Mental Health and Other Support Systems

Farm initiatives:

- **Infrastructure and Healthcare Services:** Flower farms have taken commendable steps in ensuring the health and safety of their employees by providing on-site clinics, PPE, health awareness initiatives, and safe work environment practices. However, farms that lack on-site clinics should invest in developing these facilities to reduce dependencies on neighboring farms and ensure direct healthcare access for their employees.
- **Mental Health Initiatives:** As the need for mental health support becomes evident, it's recommended for all farms to either establish or bolster their counseling services, ensuring that they cater both to the physical and mental well-being of their employees.
- **Continual Improvement:** With concerns around infrastructure, road quality, and the balance between private and public hospital access, farms should engage in continual assessment and collaborative strategies to improve access to quality healthcare for their employees.

Government initiatives:

- **NHIF Coverage Enhancement:** The NHIF has played a pivotal role in ensuring healthcare access, especially for low-income Kenyans. However, its scope must be expanded to cover optical, dental, and specialized care to alleviate the out-of-pocket expenses burden on the workers.
- **Infrastructure Development:** The government should prioritize infrastructure developments, especially in areas with significant flower farm populations. Improving road quality and connectivity will not only benefit the employees but also ensure efficient transportation to external health facilities.
- **Policy Review and Implementation:** Collaborating with the farms, the government should further enhance labor laws to mandate and incentivize more comprehensive healthcare provisions, ensuring that the wellbeing of workers in all sectors is at the forefront of national development goals.

### Fringe benefits

Fringe benefits refer to the extra perks and advantages that employees receive in addition to their regular salary, such as meals, retirement plans, and bonuses. These benefits can play a pivotal role in influencing an employee's satisfaction, commitment to the company, and overall well-being. To gain deeper insights into the scope and impact of these benefits, information was gathered through a series of interviews and focus groups

### 2.1.2

at farms in different regions within Kenya. Several fringe benefits were discussed.

## Meals and food provisions

### Lunch benefits

One of the most recurring benefits across the farms is the provision of lunch to general workers. While some farms offer lunch to employees free of cost completely, most farms offer subsidized meals. Employees only make 25% of the meal cost. The remaining 75% is the responsibility of the company.

FLO certified farms offer subsidized lunch and split the costs of the 75% between them and Fairtrade. This initiative is particularly beneficial, considering the farms sometimes reported they are unsure if their employees have access to breakfast, and the portion sizes provided during lunch are substantial. Farms testified that since lunch started being provided, employees' health significantly bettered, backed by doctors' judgments at the clinic and an increase in bodyweight.





## **Water**

Another important fringe benefit is the provision of fresh water. Farms do not offer water only for consumption during work hours, but also largely allow employees to take it home. For instance, one farm in Nairobi indicated that workers could take up to 5L of water home daily, and in another farm, employees can request up to 5 jerrycans of 20 liters every week. However, in the Naivasha region, while purified drinking water is provided, challenges arise concerning its alkaline nature and the sufficiency to cater to the amount of people brought into the communities by the farms. Some farms consequently consider supplying non-purified water, although it contains high levels of chloride. Non-purified water can lead to visible effects like brown discoloration of teeth, though it's not deemed a long-term health hazard. The farms have thus indicated a disliking to providing non-purified water and favored providing high quality water in lesser quantities. Despite these water-related challenges, the farms' commitment to ensuring access to this vital resource underscores its importance in all regions of Kenya. Farms in this study admitted to spending an average yearly amount of nearly 100 million KES on water and food provisions.

## **Other food provisions**

Beyond lunch, there's a universal provision of daily meals and snacks for all employees. Special occasions, like Christmas, see employees receiving additional gifts, often in the form of imperishable drinks and food. One farm further supports their employees' nutritional needs by offering subsidized maize and milk, selling the products from farm grounds directly to employees at a large discount compared to market price. Additionally, employees benefit from reduced prices on gas cylinders for cooking.

## **Financial and monetary benefits**

### **Loans and financial assistance**

Financial stability is promoted through several initiatives. Most notably, employees at many of the farms visited can access interest-free loans to cater to emergencies and personal exigencies. A form of this is the SACCO initiative, which employees are free to take out in case of financial distress. Employees reported often using these SACCOs in case of medical bills, tuition fees for their children and family emergencies. Moreover, in the unfortunate event of an employee's death, the company extends financial contributions to support the grieving family.

### **Bonuses and incentives**

Bonuses serve as a significant morale booster. General workers have the potential to earn monthly bonuses, sometimes reaching up to 1000 KSh, contingent on meeting certain

targets set by management. Many farms reported paying employees a bonus per stem in the packing department above a daily target. This bonus was then added to the monthly salary. As reported, many employees met their targets, and thus many employees received a bonus at the end of the month.

### **Retirement plan**

As mandated by Kenyan law, all employees build a pension during their working years. Every month, a percentage is deducted from a workers' salary, which is then matched by the employer. This goes to the pension fund. This is a mandatory fringe benefit, which has met some criticism, as many employees and HR professionals indicated that due to the cost of living currently rising people favor to increase their spending money rather than build a pension. Additionally, collection of the built-up pension turned out to be difficult and unclear. Interviews with management personnel on farms revealed that there was some suspicion about where the money went, because it was almost impossible for employees to collect the money upon retirement.

### **Health and safety**

#### **Work-life balance and personal development**

Understanding the challenges employees face outside of work, several companies prioritize family welfare. They provide crèche services for working parents and also offer education coverage, alleviating some familial responsibilities. While technical training opportunities are readily available, there's a limited scope for advanced career certifications.

### **Sports**

One fringe benefit that was highly valued by employees as indicated during focus group discussions, was the formation of sports teams representing the farms. Workers were very appreciative of the great value added by, for example, volleyball, soccer and basketball teams made up of volunteer farm employees. FLO certified farms all had sports teams as a Fairtrade initiative. Not only do sports teams improve workers' physical health and morale, but employees also stated it brought them pride to show the community their work and sportsmanship.

# 100M

The amount spent by Kenyan Farms on water and food provisions

## Accommodation and transport

### Housing and accommodation

Shelter is a basic need, and many farms facilitate this by offering a housing fee, differing in sum but leading up to 3000Kes per month. In addition to this, some farms in more rural areas receive on-ground housing. These houses are then subsidized and offered to employees at a reduced rate. The housing fee was well received by employees, as it helps cover a basic necessity in a time of high costs and inflation. The on-ground housing was often met with comments regarding the viability of the structure considering the assignment of houses based on function within the company. General laborers with large families were often housed in homes that were too small based only on their roles.

### Transportation

Transport to the farm can sometimes be difficult due to poor infrastructure and public transportation within the community. Not many farm employees have cars, and often they are left to walk or bike to the farms. Mostly large farms, those belonging to a larger company, offered buses for employees to get to work. Secluded farms tended to offer the same benefit. More senior roles are often offered their personal motor vehicles, and general workers sometimes received bikes for personal use. In general, transportation to the farm was well taken care of.

### Other notable benefits

Parental leave policies in many farms often exceed governmental requirements, as many farms indicated maternal care was a high priority. Therefore, many farms indicated that they had a nursery on site where new mothers could take their children during their working hours. In case there was no creche present, new mothers could often leave work during lactation hours to feed their children and come back after. Moreover, in collaboration with Fairtrade, some farms provide school fee allowances, which differ based on various criteria.

### Employee feedback and comparisons

Employees evidently value the efforts of their employers. Feedback suggests high appreciation, especially for benefits like food provisions, water, and milk. The collaboration with Fairtrade not only ensures premium benefits for employees but also fosters community development and personal growth.

Employee feedback varied largely on the location and efforts of the farm, as farms located in drier regions often struggled to provide sufficient water to their employees. One major feedback point was the sufficient water supply, highlighted as a priority for

many employees. The Naivasha region proved to be stricter in meal provisions, as lunch was less often provided. Also, in this region, the water provision was not sufficient according to employees at one farm. As Lake Naivasha provides a natural water source, water was deemed a natural resource, yet employees urged for more available drinking water. The sudden growth of the population due to the establishment and growth of the farm has stopped the farm from providing water for all employees.

Additionally, both the Naivasha region and the Eldoret region showed a great focus on providing employees with fringe benefits and information to serve the community as well. Both being regions with communities that were largely established due to the workers drawn to the farms, the farms were the ones to build much of that community. Because of this reason, in the more rural and isolated areas, there was a stronger tendency toward provision of extra benefits, trust establishment and more commitment to community initiatives.

- **Water Policy and Management:** Especially in regions with less fresh water supply, the government should intervene to ensure sustainable water usage and management. This could involve regulatory measures or the provision of resources to support water purification.
- **Facilitate Community Development Initiatives:** Recognizing the significant role farms play in community-building in regions like Eldoret and Naivasha, the government should foster collaborations and support community development projects.





### Conclusion and recommendations

At the center of fringe benefits lies the need for basic necessities, with meals, water, and housing receiving most praise. The collaborative efforts of farms go a long way in enhancing the quality of life for employees. While these initiatives are commendable, there are clear disparities based on geographical location, with regions such as Naivasha facing significant challenges in water provision and meal benefits. Additionally, feedback from employees highlights the importance of a consistent approach to benefits, stressing the need for regularity and sufficiency in water supply and other essential perks. The overarching theme from the findings is the dual responsibility shared by the farms and the broader ecosystem, including the government.

Farm initiatives:

- **Standardized Benefit Schemes:** Ensure a consistent approach to benefits, irrespective of the region, to foster equity among employees.
- **Enhanced Water Provision:** Prioritize sufficient and high-quality water supply, especially in regions like Naivasha where challenges are evident. Consider partnerships or investments in water purification systems to meet the demand.
- **Engage in Regular Feedback Mechanisms:** Implement periodic feedback sessions with employees to understand evolving needs and modify fringe benefits accordingly.
- **Collaborate with Third-Party Entities:** Strengthen partnerships with organizations, which not only ensures premium benefits for employees but also paves the way for community development initiatives.

Government initiatives:

- **Infrastructure Development:** Enhance infrastructure to ease employees' commute to farms. This could involve improving road conditions or supporting public transport systems in collaboration with farms.
- **Transparent Retirement Fund System:** Address concerns related to the pension fund, ensuring transparency in its operation and clarity for employees during collection at retirement.
- **Water Policy and Management:** Especially in regions with less fresh water supply, the government should intervene to ensure sustainable water usage and management. This could involve regulatory measures or the provision of resources to support water purification.
- **Facilitate Community Development Initiatives:** Recognizing the significant role farms play in community-building in regions like Eldoret and Naivasha, the government should foster collaborations and support community development projects.

### Career/learning development

2.1.3

An important aspect of recognition and satisfaction at work is the ability to grow and feel appreciated within the company. Along with the infrastructural and financial efforts in general education in the communities, companies highly valued the growth and advancements of their employees. Interviews with HR management showed that the farms prioritized their current employees' development, which was reinforced by discussions with employees themselves. Two types of education within farms were often mentioned, showing internal and external efforts. Participating farms informed to spend an annual 1.5 million KES average on employee education and advancements.

1.5M

The amount spent by participating farms on employees education and advancements

#### On-the-job training & career progression

The majority of flower farms provide on-the-job training, emphasizing the essential skills and knowledge required for specific roles. Opportunities for career advancement are also presented, ranging from general workers moving to first-level management, to more specialized shifts, such as transitions from harvesting roles to greenhouse positions.

#### Education & skill development

##### Internal initiatives

Many farms value education and offer both in-house training sessions and support for external educational pursuits. The farm actively sponsors employees seeking job-related education, such as leadership training for management roles. Employees have been known to transition from roles like general workers to supervisors, and eventually, specialized positions like crop technical workers.

All farms emphasized internal promotions. When job openings arise, existing employees are given priority. This preference extends from general roles, such as drivers, to managerial positions, especially in production areas. Management explained that internal employees know the farm and its operations best, and are therefore preferred over outside hires. However, there's an acknowledgment of the need to balance internal promotions with hiring externally for roles demanding specific certifications or expertise.

### External Collaboration

Collaborations with entities like Fairtrade have led to personal development training that enhances skills like driving or computer proficiency. Fairtrade also provides a budget enabling general workers (excluding management) to pursue further education. Several farms that were not FLO certified also indicated offering training or training budgets for employees at external institutions, which employees could follow on a subsidized basis.

### Employee-driven efforts

Using the financial assistance options at the farms, such as the SACCO, some employees pursued their own efforts in further education. Education leave was then offered primarily for exams.

### Challenges & areas for improvements

While many initiatives promote growth, challenges remain:

- The sector sees a considerable number of employees without formal education.
- There is an expressed need to enhance career progression structures for current employees.
- Some employees face financial constraints, hindering them from pursuing additional educational opportunities even with partial subsidies.
- Some employees face time constraints, as education needs to be followed outside working hours.

### Broader community initiatives

While direct educational support for employee families is not prevalent, farms engage in community-oriented programs. For instance, some farms fund the education of children in orphanages, with beneficiaries progressing to tertiary education levels.

### Conclusion and recommendations

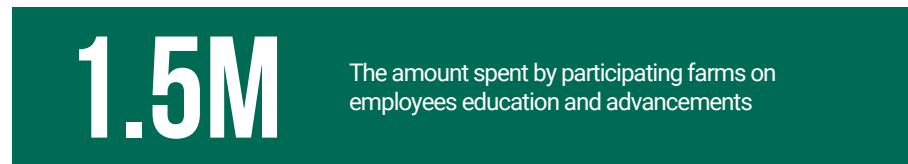
The floriculture sector, represented by the flower farms interviewed, exhibits a strong commitment to employee growth through varied career and learning development strategies. Collaborative efforts with entities like Fairtrade further amplify opportunities. Nonetheless, a more structured approach to career progression and broader educational support could enhance these initiatives.

### Recommendations:

- Formalize career progression paths, ensuring clarity and motivation for employees.
- Expand partnerships with external entities, diversifying training opportunities.
- Explore more comprehensive financial assistance schemes for employees seeking higher education.

- Foster a culture of continuous feedback, allowing iterative improvements in learning and development programs.

**Note:** The findings of this report are based on interviews with HR managers at flower farms and might not capture the entirety of practices across the industry. Further studies with a broader sample could provide more comprehensive insights.



### Spending on employee benefits

#### 2.1.4

In order to quantify and further emphasize the impact the floriculture sector has on its employees and their direct environment all participating farms in this study were asked to submit their annual spending on discussed topics. The following average spendings were concluded:

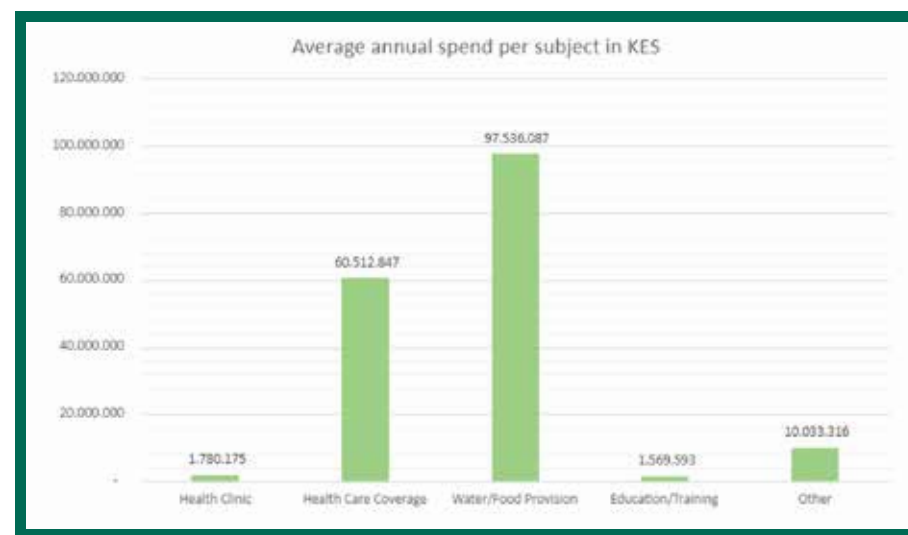


Figure 1: Bar chart showing the average expenses of Kenyan flower farms on well-being initiatives for FY2022



In total this adds up to an average yearly spending of nearly 171 million KES for each farm, on employee benefits and wellbeing. This quantification further aims to show that farms intend to maintain the health of their employees and are committed to this goal both by their own efforts and investments. Highest spendings were on water and food provisions, and health care coverage. Basic necessities prove to be important to management. Other contributions to employee wellbeing mainly constitute of housing levies, proving again that the stability of health and necessities for employees was well maintained and prioritized.

## Employee satisfaction

### **Overview and feedback mechanisms**

Farm management places significant emphasis on employee satisfaction and welfare. Multiple committees, including those for welfare, gender, and safety, are testament to the proactive approach taken. Rare occurrences of accidents and the provision of ample holiday hours, coupled with a supportive stance on sick leave, underline the company's commitment to employee well-being. Feedback mechanisms are diverse and include open interviews, surveys, suggestion boxes, and an open-door policy. A unique feature is the HR meet-and-greet sessions during lunch, providing direct interaction channels. Moreover, specialized surveys, like the global survey tailored with 42 questions, further delve into employee sentiments. External parties also interview employees during social audits, ensuring an unbiased assessment.

### **Employee perceptions and concerns**

Employees generally express a sense of pride and support, valuing the company's impact on their lives, especially in areas like education and healthcare. Many stay with the company for extended periods, often spanning 15–20 years. However, concerns about the rising cost of living underline the desire for better salaries and improved housing. Despite these challenges, there's a widespread appreciation for the company's stability, transparent communication, and the supportive welfare measures in place. A tangible example of the feedback-action cycle was the recent enhancement in the provision of PPE post employee feedback. A recurring theme in the feedback is the aspiration for bigger bonuses and improved canteen food quality.

### **Training, incentives and management's role**

Performance tracking and evaluations are fundamental, with bonuses tailored to performance scores to foster motivation. Fixed performance bonuses with potential increments incentivize consistent work ethics. Management, especially at the CEO level, plays a pivotal role in employee satisfaction. Regular training sessions ensure that

managers are equipped to handle feedback and improve future interactions. Key attributes highlighted by employees include empathetic management, a good CEO, transparent business discussions, and treating them with respect and humanity. The farm also emphasizes specialized concerns, such as accommodations for breastfeeding and pregnant women, further cementing its reputation as an employee-centric organization.

# 171M

The amount spent by participating farms on employees benefit and well-being

### **Employees views on satisfaction**

Employees of flower farms in Kenya convey strong satisfaction with their employment conditions, emphasizing the farms' environmentally conscious practices, such as robust waste management and the prevention of chemical runoff into rivers. Salaries, which see consistent annual increments, coupled with solid support systems, further improved their contentment. Notably, the farms have impacted employees' lives through initiatives like education and healthcare support. The stable employment, even during challenging times such as the COVID-19 pandemic, underscores the farm's commitment to its workforce. This stability, alongside long-term contract opportunities, contrasts with other sectors and industries where seasonal work is prevalent. Furthermore, the farms foster open communication, with representative committees in each department, ensuring employees have avenues for feedback and concerns. Instances like the proactive response to feedback on work clothing manifest the management's attentiveness to employee feedback. An overarching sentiment is the continuous improvement in living and working conditions, reinforcing the mutually beneficial relationship between the farms and their employees.

Employees were asked during the focus groups to submit a short survey containing the following questions:

- A. How satisfied are you with your job.?
- B. How satisfied are you with your working conditions in the floriculture industry compared to other industries?
- C. Over the past years, how much did the flower farm contribute to your community?
- D. How satisfied are you with the contributions of the floriculture industry when compared to other industries?

## **Contribution of Kenyan flower farms to the local communities** 2.2

The floriculture sector in Kenya has rapidly evolved over recent decades, becoming an essential contributor to the national economy and regional development. Undoubtedly, the sector's financial contributions, often underscored by enhanced employment opportunities and increased regional revenues, are evident. However, as we aim to underline, the broader impact of the floriculture industry, particularly on local communities, extends beyond mere fiscal parameters. It is a confluence of economic transformations, educational opportunities, health advancements, and infrastructural developments, each element interacting dynamically with the other.

The direct and indirect influences of these interactions are extensive, shaping daily lives, influencing long-term aspirations, and sometimes, even altering the very fabric of community structures and identities. This report seeks to assess and articulate the social, economic, and infrastructural impacts the industry has brought to the communities surrounding farms, with a focus on community development, empowerment, and overall quality of life.

### **Economic contributions** 2.2.1

As prevalent in the interviews conducted, the economic impact of the farms did not only contribute to the overall Kenyan economy, but also greatly benefited the local economic and entrepreneurial climate. The economic contributions can be brought under several topics:

#### **Job Creation and Opportunities**

As per estimate, the sector employs over 500,000 people directly on the farms. Several farms indicated that the population in local communities greatly increased since the establishment of the farm, as a result of the local employment opportunities that consequently drew in people from other communities. Through this dynamic the farms have been able to provide employment for those in their respective communities as well as provide employment opportunities for those in areas with less prospects. These 500,000 direct employees of the sector have all provided new opportunities for their immediate families, as the estimated additional beneficiaries of employment in the floriculture industry can amount to five people per employee. Following this reasoning, not only does the floriculture industry directly employ over half a million people, but it also creates an income and builds a footing for basic needs of over 2.5 million Kenyans.

#### **Local Business Growth and Business Opportunities**

The establishment of a flower farm attracts people from other communities because of employment opportunities. The growth of communities around farms is remarkable, as the establishment of a flower farm in some cases increased the local population by as much as 1100%, turning small villages of less than 500 people into thriving communities and towns of 6,000+ inhabitants. The salaries of these workers and the families they bring

with them, in turn, create new business opportunities for local communities. The daily needs of the community need to be met which allowed for the emergence of new businesses and shops around the primary floricultural activities, further driving employment. Examples of businesses that have been established in developing communities are grocers, telecom shops, motor repair shops, clothing and tailoring shops, and other businesses catering to the local population. This, in turn, has stimulated entrepreneurial incentives within the communities, and further provided employment opportunities within the area. The growth of the industry has fostered the development of markets, housing facilities, and transportation networks. Additionally, the farms prioritize local suppliers, except for specialized inputs like chemicals and fertilizers.

**500,000** The amount of people employed on horticulture sector

#### **Land Valuation and Investments**

The entry of floriculture businesses into previously low-population regions has significantly elevated land values, which in turn has spurred local investment. In many areas where farms were established, investments were quickly undertaken as the population in the community grew. Such investments often manifest in the form of rental housing, contributing to the overall growth of the local real estate market. These investments have caused the value of the land in the area to increase significantly, and additionally allowed for rental housing to become more available to those wishing to reside in the area.

### **Infrastructural developments** 2.2.2

With the establishment and growth of many of the farms came the issue of insufficiently developed infrastructure. Farms have thus largely taken it upon themselves to improve the infrastructure in the area.

#### **Water supply**

A notable impact has been the provision of water. Especially in areas with little access to fresh water sources and areas prone to contamination due to local climatic conditions, farms have invested in delivering treated water. Farms indicated that a large priority is the provision of clean water for employees and the communities that surround them. The construction of dams and boreholes for collection and storing of water is now a common practice. Farms expressed the importance of a sufficient water collection system with regards to both the farm's operating practices as well as the community's need for clean water.



### **Transportation and Roads**

Investments in the road networks, especially those leading to the farms, have been substantial, easing transportation woes for both farm operations and local communities. The ease with which employees can get to and from the farms has been largely improved by the farms themselves. Not only the employee accessibility needs to be improved when operating a farm with hundreds or thousands of employees, the need for suppliers to enter the farm, and emergency vehicles to access and exit safely need to be guaranteed. This led to the instant development of roads in the area in which the farms operate. An important part of the community's infrastructure, as it has been noted that it facilitated access to the community and the development of other infrastructural improvements.

### **Electricity**

Farms have played pivotal roles in the facilitation of electricity-related challenges in their respective areas. With the establishment of the farm came the need for a solid electrical path in the area. Not only has the farm thus drawn in the population to strike the government's attention for electrical and infrastructural developments in the area, but the farms also often took it upon themselves to develop electrical wiring sufficient to sustain the farm's operations, and with that constructed a basic network for the area.

### **Healthcare**

As many farms have health clinics on site, some farms indicated that these clinics are open to the general public. Not only are employees and their immediate relatives welcome to the clinic, which generally employs nurses, in some instances communities were welcome to visit the nurse too. The onsite nurse then helped with basic medical care, if the injury became too severe, the clinic could refer the visitor to the local hospital. A priority at many farms was investing in local hospitals. Especially farms in areas with a low population outside the farm's operations, invested heavily in healthcare in the community. Many farms indicated they had invested in hospital equipment, had ambulances on site to serve the community, and supported the local hospital through donations. Marked a priority in infrastructural developments, hospitals and healthcare were heavily mentioned during the conversations with individual farms. Community bonds were heavily strengthened by the farms' contributions to the local healthcare facilities. Not only have farms offered this piece of healthcare to the community, but several large farms have also started trusts, which in turn invested in hospitals serving the local community. Farms have made commendable strides in healthcare. Not only have they contributed to the emergence of private hospitals, but they have also established on-site health centers and proposed the introduction of ambulance services to cater to emergencies.

### **Education**

A significant emphasis has been placed on bolstering the educational infrastructure. Investments span from building schools to equipping them with computers, seating

facilities, libraries, and laboratories.

## **Social Contribution**

**2.2.3**

### **Cultural intergration**

The farms attract employees from diverse regions of Kenya. While there are inherent cultural differences, the national language, Swahili, brings together employees from all over the region, fostering a sense of community and integration.

### **Community engagement and safety**

Farms have established close ties with local police forces. This collaboration ensures prompt responses to any security challenges, thereby strengthening the overall safety of the area. Reduced incidents of theft and vandalism are testaments to these initiatives.

### **Employee empowerment and training**

Farms have prioritized the empowerment of their workforce, with particular emphasis on women. Training modules, especially those focusing on financial literacy, have enabled employees to translate their skills and knowledge beyond the workplace, benefiting the broader community.

### **Corporate social responsibility (CSR)**

A significant portion of revenue is directed back into community projects. These initiatives range from infrastructural developments, tree planting drives to educational endeavors.

### **Healthcare and nutrition**

Medical assistance extends beyond employees to their families, with initiatives such as cancer screenings for women, vaccinations for children, and continuous medical training and support.

In conclusion, the floriculture sector in Kenya brings an impact across social, economic, and infrastructural relevancies. The findings from this report demonstrate that flower farms serve as significant developers of regional development. Through the creation of job opportunities, bolstering local economies, investing in infrastructure, and enhancing the quality of life for millions, these farms are a crucial asset to the nation. Additionally, their role in cultural integration, employee empowerment, community safety, and the overall betterment of healthcare and education is commendable. These contributions are not just centered on individual benefits but are emblematic of the broader narrative of community evolution and empowerment. With the industry's continued growth, it becomes imperative to recognize and appreciate the broader societal contributions of the floriculture sector, as they lay the groundwork for a thriving, interconnected, and prosperous Kenya.



A photograph of two women working in a field of silver chrysanthemums. They are wearing green long-sleeved shirts and colorful headwraps. The woman on the left has a headwrap with a pink, blue, and black pattern, while the woman on the right has a white headwrap with a red and orange floral pattern. The field is filled with rows of small, silvery flowers. A dark green text box is overlaid on the center of the image.

**Enhancing Wellbeing:  
Social Impact of Kenyan  
Flower Farms**





**Healthcare Investments:**



ON-SITE CLINICS,  
HEALTH CAMPAIGNS

**60M**

60M KES AVERAGE  
ANNUAL SPENDING

**Employment Impact:**



MEALS, WATER  
& HOUSING

**100M**

100M KESS AVERAGE  
ANNUAL SPENDING

**Career Development:**



INTERNAL TRAINING, PARTNERSHIPS  
WITH FAIRTRADE

**Employee Satisfaction:**



SATISFACTION  
RATING: 4.4/5



STABILITY AND IMPROVEMENT IN  
WORKING CONDITIONS

03

# Climate Assessment





### Career/Learning Development

### 3.0

Climate change is an urgent global issue that has captured widespread attention in recent years. It refers to long-term shifts in weather patterns and environmental conditions caused primarily by human activities, particularly the emission of greenhouse gases into the atmosphere. As the Earth's temperature continues to rise, the impacts of climate change are becoming increasingly evident and far-reaching. From extreme weather events to ecosystem disruptions, rising sea levels to agricultural challenges, the world is experiencing a multitude of changes and consequences due to climate change.

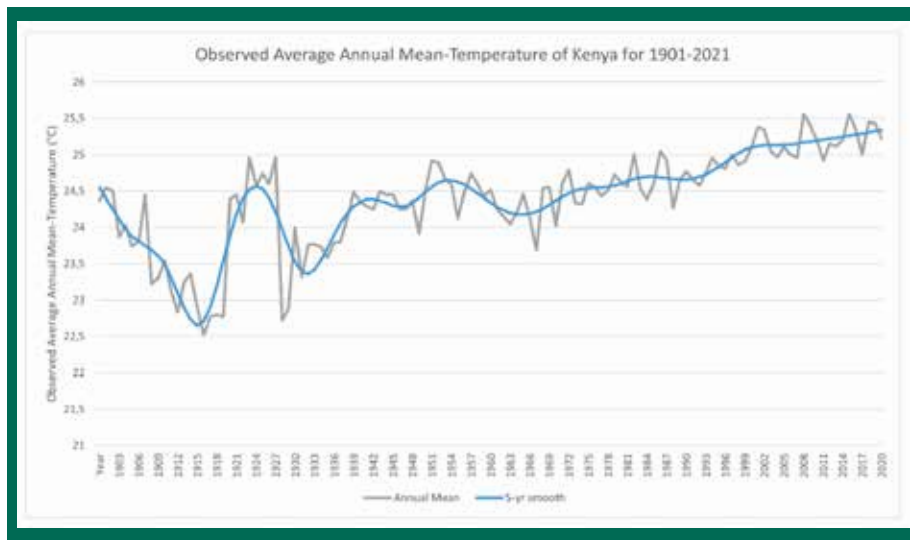


Figure 4: Observed Average Annual Mean-Temperature rise over time of Kenya showing an upward trend from 1933 onwards. Source: <https://climateknowledgeportal.worldbank.org/country/kenya/climate-data-historical>

Scientific evidence shows that the average temperature of the Earth's surface has been steadily increasing over the past century, shown in Figure 3. This rise in temperature is largely attributed to human-induced greenhouse gas emissions, trapping heat within the atmosphere and leading to global warming. The consequences of this temperature rise are profound and wide-ranging. It disrupts the balance of ecosystems, forcing species to adapt or face extinction. It also accelerates the melting of ice caps and glaciers, contributing to rising sea levels and threatening coastal communities. Furthermore, higher temperatures can magnify drought conditions, intensify heat waves, and alter

precipitation patterns, with significant implications for horticulture, water resources, and human health. When temperatures have risen 1.5 degrees, 70%-90% of the coral reefs will be gone, a 2.0 increase will result in all coral reefs dying off.

One of the most visible consequences of climate change is the increase in extreme weather events. Heat waves, hurricanes, floods, and droughts are becoming more frequent and intense, posing significant risks to human lives, infrastructure, and ecosystems. These extreme weather events can lead to devastating consequences, including loss of homes and livelihoods, displacement of populations, and the destruction of critical habitats. The increased frequency and severity of these events serve as a stark reminder of the urgent need for global action to mitigate and adapt to climate change.

Another notable impact of climate change is the rising sea levels. As global temperatures rise, ice sheets and glaciers melt, causing the oceans to expand. This phenomenon poses a significant threat to coastal communities, especially those in low-lying areas and small island nations. Rising sea levels contribute to coastal erosion, saltwater intrusion into freshwater sources, and increased vulnerability to storm surges. These effects not only disrupt ecosystems but also jeopardize the livelihoods of millions of people who rely on coastal regions for their sustenance and economic activities

In conclusion, the impacts of climate change are being felt across the globe, ranging from extreme weather events and rising sea levels to agricultural challenges and food security concerns. Urgent action is required at local, national, and international levels to mitigate greenhouse gas emissions, promote sustainable practices, and strengthen resilience to the changing climate. The need to address climate change has become a global imperative, as its consequences continue to shape the world we live in and impact the well-being of both present and future generations.

### Current situation in Kenya

### 3.1

Climate change is becoming increasingly evident in Kenya, with rising temperatures being a significant aspect of this phenomenon. The country has witnessed a notable increase in average temperatures over the past years, highlighting the impact of global warming. The movements of the temperature within Kenya are visualized in Figure 4, here it can be seen that the last decades there has occurred a continuous increase in average annual mean temperature. These rising temperatures have implications for various sectors, ecosystems, and communities within Kenya. Addressing and adapting to these temperature changes are crucial for building resilience and ensuring a sustainable future in the face of climate change.

Evidence of climate variability is evident in Kenya through the more frequent and extreme climate events, such as droughts and floods, which have negatively impacted livelihoods and the environment. The occurrence of droughts in the country has become more frequent, shifting from once every 20 years to every few years, with some years experiencing annual occurrences. The Kenya Meteorological Department reported the following extreme drought events for the period 2011-2021:

- During the period from July 2011 to mid-2012, the entire East African region was severely affected by a devastating drought. This drought was considered the worst in 60 years, impacting countries including Somalia, Djibouti, Ethiopia, and Kenya. An estimated 9.5 million people in these countries were affected by a severe food crisis, facing significant challenges in accessing sufficient food and water.
- In January 2014, the Kenyan government declared an impending drought, signaling a growing concern over the worsening situation. Approximately 1.6 million people in Kenya were affected by this drought, which was exacerbated by poor rainfall performance and an increase in food prices. The combination of these factors further strained the availability of food and water resources, posing significant hardships for the affected population.
- From late November 2016 to early 2017, Kenya experienced yet another drought. Insufficient rainfall during the MAM (March-April-May) and OND (October-November-December) seasons resulted in the depletion of pasture and water resources. This led to water and electricity rationing in various regions and reports of migration as communities sought alternative resources for survival. The drought extended into early 2018, affecting multiple areas and exacerbating the ongoing challenges faced by communities.
- At the beginning of 2019, drought conditions persisted in West Pokot, Turkana, and Baringo Counties in Kenya due to prolonged rainfall failure. These regions experienced a severe shortage of water and food, necessitating the provision of food aid to support the affected population.
- In 2020, below-normal rainfall during the OND (October-November-December) season once again led to drought conditions in certain areas. Specifically, Garissa, Mandera, and Wajir Counties were placed on alert due to the drought status. Reports of acute malnutrition and low food security emerged in the Arid and Semi-Arid Lands (ASAL) Counties, indicating the severity of the situation and the urgent need for assistance in these vulnerable regions.
- Climate simulation models project potential increases in annual mean rainfall by 7% and temperature rises of 3-4°C by the end of the 21st century in East Africa. In Kenya, under the A1B greenhouse gas emissions scenario, temperature increases of up to 3°C

are projected, along with significant precipitation increases of over 20%. Coastal areas may become drier, while highlands and northern regions of Kenya may experience wetter conditions. Wet extremes are expected to become more frequent, while dry extremes in northern Kenya may become less severe.

Looking ahead, projections for Kenya between 2020-2030 indicate a temperature increase of 1°C and wetter conditions of 7-10% during the short rainfall season. By the end of the 21st century, temperature is projected to rise by 3-7°C, with rainfall intensity potentially increasing by 7-48%. These findings and projections help illustrate the changes in temperature and rainfall patterns over time, providing valuable insights into the potential future climate scenarios in Kenya.

### Potential risks for the floriculture sector

3.2

The effects of climate change can affect the floriculture sector, harvests could be affected, and costs of inputs could possibly rise. The climate risks for each sector can be split up into different characteristics of the business. The risks are split into the following different disciplines:

- **Procurement Costs:** Climate change can have an impact on the full supply chain from the production process of the flowers to the transportation to domestic or national markets. Differing weather circumstances and extreme weather can impact the costs of certain products or make transport more expensive.
- **Markets and Economics:** Due to increasing awareness of climate change, market demands can change in line with customer demands. There could be an increase in sustainable products. The demand for food security within Kenya can impact the allocation of land for agricultural purposes, the allocation for food production can increase and possibly take over land that is being used for flower production.
- **Harvest Quantity and Quality:** Flowers rely on the environment they grow in, increasing temperatures and extreme weather events can have a significant impact on the quality and quantity of the harvest. This has a direct effect on revenue generated, a loss of harvest will result in decreasing revenues and affect the profitability of the farm.

### The experienced effects on Kenyan flower farms

3.3

The current state of the climate already has an effect on farms within Kenya. Multiple farms have been interviewed across different regions within Kenya where the experiences of climate change have been discussed.



### Mount Kenya region

#### 3.3.1

The flower farms in the Mount Kenya region face several climate risks that have the potential to significantly impact their operations. One of the primary challenges is reduced rainfall, driven by the effects of climate change. This reduction in rainfall has led to water scarcity, adversely affecting the farms' water levels and business viability. The scarcity of water has prompted these farms to undertake strategic measures such as constructing dams and implementing water harvesting practices. By adopting these initiatives, the farms aim to enhance their water storage capacity and mitigate the risks associated with drought. More frequent and more extreme weather events like hailstorms are also a risk within the region, possibly damaging crops grown outside of greenhouses or damaging greenhouse plastic.

Furthermore, the Mount Kenya region has encountered a rise in the incidence of new diseases and pests, attributed to prolonged droughts. In response, the farms are considering the use of new chemicals to protect their flower crops and prevent potential harm. This illustrates the complex interplay between climate change and the emergence of new challenges for flower cultivation in the region.

### Nairobi region

#### 3.3.2

The flower farms situated in the Nairobi region confront a distinct set of climate risks that have implications for their productivity and economic viability. The most prominent among these challenges is water scarcity, a consequence of shifting climate patterns. Insufficient water availability impacts both the quantity and quality of the flower harvests, thereby posing a direct threat to the farms' revenue streams. To address this risk, the farms have adopted innovative strategies such as water recycling and rainwater harvesting. These measures are aimed at ensuring a more sustainable water supply and reducing the farms' reliance on increasingly scarce water resources.

In addition to water scarcity, the Nairobi region faces elevated temperatures, which can have detrimental effects on flower quality and marketability. The higher temperatures disrupt the growth and development of flowers, potentially leading to reduced shelf-life and diminished attractiveness to customers. Some farms are actively exploring ways to regulate temperatures within their facilities to mitigate these adverse impacts. These challenges underscore the need for adaptive strategies to manage water resources effectively and navigate the uncertainties associated with changing climate patterns.

### Lake Naivasha Region

#### 3.3.3

In the Lake Naivasha region, flower farms are grappling with the unpredictable nature of

climate variability. The looming threat of the El Nino phenomenon, projected around October or November, is a cause for concern. With the potential for strong increased rainfall, there's a corresponding risk of reduced flower quality and potential reputational damage. Such negative impacts could result in a shift of customer preference towards other regions, like Ethiopia.

Water resources pose another challenge. While many farms rely on rainfall water, the frequency of rainfall threatens a consistent water supply. Inconsistent weather patterns, notably the unpredictability of rainfall and the prevalence of droughts, are undermining traditional farming approaches.

These droughts not only affect the immediate availability of water but also manifest in weakened flower stems due to reduced humidity. The degradation in soil quality, another byproduct of drought, also hampers flower production. Furthermore, the emphasis on water conservation has led to strategies such as enhanced water storage, recycling, and filtration. These measures aim to bridge dry periods and develop sustainable water systems. The natural reservoir provided by the Lake Naivasha basin is invaluable, but extracting this water comes at a cost, with government-imposed water taxes recently on the rise. Despite these challenges, some farms maintain their sustainability credentials by using water more efficiently than others.

As energy prices surge, many farms are pivoting towards renewable solutions like solar panels. Investments in this direction, coupled with battery storage solutions. There's a proactive push towards tree planting by some farms, both as an ecological response to aid the hydrological cycle and combat deforestation, and as a potential entry into the carbon credits market. Moreover, the trees act as windbreaks, protecting the greenhouses from strong winds which are significantly present in the region.



*The Mount Kenya region has encountered a rise in the incidence of new diseases and pests, attributed to prolonged droughts.*

## Eldoret Region

Interestingly, market dynamics in Europe play a role in these farms' profitability. Hotter months in Europe reduce the demand for flowers due to their reduced lifespan in such climates. This drop in European demand influences Kenyan farms, impacting their production rhythms. The farms have noted quality effects on their products due to increasing temperatures over the last decades, with issues like shorter flower stems affecting profitability. Adapting to these challenges requires further investment in new flower varieties or other mitigation techniques, which is a significant financial commitment.

## Kenya as a whole

In analyzing the diverse regions of Kenya, it becomes obvious that the challenges arising from climate change are both many-sided and linked. Every region, whether it's Mount Kenya, Nairobi, Lake Naivasha, or Eldoret, struggles with the significant impacts of differing rainfall patterns, leading to water scarcity. This scarcity does not only result in reduced water availability but also in its implications for pest control and business sustainability.

The unpredictability of rainfall, coupled with extreme weather events, shows the vulnerabilities of the floriculture sector, which relies on consistent climatic conditions. Elevated temperatures across the regions further increase these challenges, threatening the marketability of the harvest. Moreover, the emergence of new pests and diseases, likely caused by prolonged droughts, adds another layer of complexity. It demands not only immediate interventions but also long-term strategies to ensure that farms can withstand future climate shocks.

In conclusion, the varied climate risks faced by these Kenyan regions addressing the broader challenges confronting floriculture sector. It showcases the urgent need for robust, forward-looking strategies that not only address immediate concerns but also prepare the sector against future climate uncertainties.



*Hotter months in Europe reduce the demand for flowers due to their reduced lifespan in such climates.*

## 3.3.4

## Mitigation initiatives implemented by farms

Most farms within Kenya are acknowledging the risks of climate change, experiencing the effects and proactively engaging on mitigation initiatives. The farms are exposed to different climate risks depending on the region where they are located. Where some regions are exposed to more extreme droughts and water scarcity, others experience extreme hailstorms. The most severe and worrying climate effect throughout the sector are droughts, the water shortage in Kenya is increasing; water input is increasing in costs and to depend on rainfall for the full year has become a major risk. The following risks and its mitigation initiatives are identified, to ensure a healthy farm for the future:

- **Droughts:** Due to more frequent and more persistent droughts, water scarcity becomes a risk and more threatening diseases and pests arise. Farms are investing in mitigation strategies such as: building dams; increasing water storage; drip irrigation; recycling of water within a hydroponics environment; optimizing rainwater collection; and, investing in chemicals to prevent harvest damage of new diseases.
- **Extreme Hailstorms:** Farms that grow their flowers in an open environment are exposed to damage by hailstorms, they are installing hail-nets to mitigate this risk.
- **Energy:** Many farms in the region are investing in green energy resources to decrease the risk of increasing energy costs within Kenya. The farms are particularly investing in solar energy, an effective way of producing green energy due to Kenya's climate.
- **Extreme wind:** In the region of Lake Naivasha extreme wind can endanger the greenhouses, the greenhouses can collapse and damage the harvest. Farms are developing the local environment to prevent strong winds from reaching the greenhouses. Trees will be planted around the farm to keep strong winds from reaching the greenhouse. This mitigation initiative is next to mitigating climate risks, also aiding the environment and can help your farm to become carbon neutral.
- **Rising temperatures:** The last 30 years Kenya has already experienced an increase of approximately 0.8 degrees of mean observed annual temperature. The rising temperatures can affect the quality of the flowers, farms are investing in cooling tools inside the greenhouses to mitigate this risk. However, this goes hand in hand with rising energy costs. A different mitigation initiative is to invest in land at a higher altitude, this ensures that when temperatures rise in the future, the new land has the same favorable climate as the lower altitude had in the past.
- **Market Demands:** With increasing awareness for climate change, customers are shifting to carbon neutral and sustainable products. Markets are demanding carbon neutral products, the flower farms are aware of this, and most farms are already MPS-GAP certified. Going into the future, the demand for these sustainable practices will likely increase even more. Most flower farms are acknowledging this and are

## 3.3.5



### Mitigation initiatives implemented by farms

Most farms are addressing sustainability in a broader sense, there are initiatives to achieve carbon neutrality and water neutrality. This includes the installation of solar panels, adoption of hydro energy, and constructing holding tanks for water harvested from greenhouses. An added layer to their sustainability approach involves efforts to shift from air to sea freight to reduce carbon emissions and programs that enhance forest cover. These include programs to plant a significant number of trees monthly, with employees actively participating in planting seeds.

Finally, community engagement is integral to some of these farms' sustainability strategies. This includes capacity-building programs that not only train locals but also promote sustainable agriculture and tree planting. Notably, while these efforts would ideally be eligible for carbon credits, current regulations in Kenya prevent farms from capitalizing on them. However, with a heightened focus on climate change at the national level, there's hope that this might change.

### Decreasing the farm's carbon footprint

The majority of the market is already demanding sustainability and safety certifications such as MPS-GAP, showcasing the need for flower farms to increase the sustainability of its operations. The flower farms are already increasing their efforts and investment amounts to become a carbon neutral business. The carbon footprint can be reduced on several areas within the farm, as such areas are identified to decrease the carbon output.

### Energy usage

The energy provided by the government is majorly generated by green energy, mostly by hydro energy but also thermal and solar energy. Due to power outages, most farms have generators located at the farm to cover the periods of time when there is no power from the net. These generators run on petroleum, emitting carbon into the environment.

To become carbon neutral, these generators could be replaced by green energy sources. Due to Kenya's climate, solar energy is an attractive option to replace the energy input from the government. Kenya has a large amount of UV-exposure throughout the year, making solar energy a good option to produce constant energy power for the full year. To replace the generators, the energy produced from the solar panels should be stored such that when there is a cloudy day, the farm can still operate on the back-up energy. Although battery installations are an expensive investment, the long-term effects could be interesting. Energy prices have gone up drastically in the past years, pushing the need for energy production on-site, batteries and solar energy are the solution to becoming

### 3.4

carbon neutral and reducing procurement costs.

Other ways of storing energy, instead of using solar batteries, are possible but might be less attractive to most farms due to the size of investment. Thermal and mechanical energy storage are alternatives, storing heat in water or a salt medium or storing energy in a flywheel or compressed air. These alternatives are more investment intensive, more complex and take up more space within your farm. To conclude, batteries currently are the most attractive option to store solar energy for future use.

### Freight

Due to the short life of flowers, the bulk is transported via airfreight, a cost intensive and high carbon emitting transportation method. Transportation via airfreight produces 500 grams of carbon dioxide per metric ton of freight while transport via sea freight produces 10 to 40 grams of carbon dioxide per kilometer. Next, to a big reduction in carbon emissions, sea freight is less cost intensive than airfreight.



*Transportation via airfreight produces 500 grams of carbon dioxide per metric ton of freight while transport via sea freight produces 10 to 40 grams of carbon dioxide per kilometer.*

However, sea freight is not yet optimal to ship the goods of the flower farms, the transport method poses only weekly deliveries to market instead of daily deliveries like airfreight. Due to longer shipment time the flowers need to be stored at a lower temperature of 0.5 degrees, farms need to invest in new storage rooms for the flowers to be stored at this temperature. More research and experiments need to be conducted with sea freight to create a reliable chain of transport.

### Carbon Offsetting

Instead of only trying to decrease your carbon emissions, the flower farm can incorporate carbon offsetting at the farm. Carbon offsetting is a method where the farm can offset its emitted carbon by removing carbon dioxide from the atmosphere. The least complex and cost intensive method is through tree planting, trees naturally capture carbon dioxide from the atmosphere through photosynthesis and convert it into biomass. Trees can be planted on land that is not being cultivated. Next to offsetting carbon emissions, trees can have extra benefits such as windbreaks, water conservation and decrease dust effects.

### 3.5.2

### 3.5.3

### Carbon offsetting

### 3.5.3

Another way to offset your carbon emission is through carbon storage; organic residuals at the farm can be processed through pyrolysis to produce biochar, a carbon rich product. This end product can be stored within a storage at or outside of the farm and can be used to offset carbon emissions. However, this process requires a large investment, machinery needs to be bought to perform the pyrolysis process. For now, this process is not interesting, but for the future it might be a favorable method to offset your carbon emissions as technology advances and the machinery will go down in price.

When a flower farm reaches carbon neutrality, the farm can consider entering the carbon credit market by selling its carbon capturing excess. The carbon captured by the trees at the farm can be sold as carbon credits, one carbon credit represents one metric ton of carbon that can be sold at a certain market price. To enter the carbon credit market to sell your captured carbon, your tree planting project needs to undergo a number of technical and regulatory requirements. This process is a significantly complex process, to ensure your project fulfills all requirements, engaging with experts is advised.

In Kenya, the country's climate is influenced by its proximity to the equator, the Indian Ocean, and the Intertropical Convergence Zone (ITCZ). Rainfall patterns in Kenya are determined by the seasonal variability and intensity of the ITCZ, which is influenced by altitude. The long rainy season typically occurs from March to May, while the short rainy season occurs from October to December. However, in the last 50 years, there has been an observed increase in irregularity and variability of annual rainfall patterns throughout most regions of the country. While the trends are not statistically significant, there have been changes in the duration and timing of rainfall seasons.







“

When a flower farm reaches carbon neutrality, the farm can consider entering the carbon credit market by selling its carbon capturing excess.

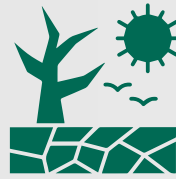




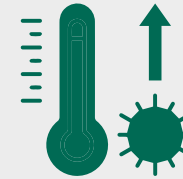
# **Climate Risks and Adaptation Strategies for Kenyan Flower Farms**



## Climate Risks:



**DROUGHTS: IMPACT ON  
WATER AND PESTS**

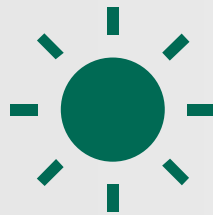


**RISING TEMPERATURES:  
EFFECTS ON CROP  
QUALITY**

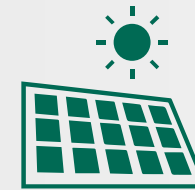


**EXTREME WEATHER:  
WIND, HAILSTORMS**

## Adaptation Measures:



**INVESTMENTS IN  
SOLAR ENERGY, CARBON  
OFFSETTING**



**ENERGY SOLUTIONS:  
SOLAR PANELS**



**WATER CONSERVATION: HYDRO-  
PONICS, RAINWATER COLLECTION**



**04**

# **Policy Assessment**



## Policy Assessment

This section delves deep into the policies that impact the floriculture sector in Kenya, aiming to unravel the implications these have on the farms operating within this sector. Specifically, the objective of this section is to address the policies that have impacted the floriculture sector and assess their repercussions for the farms. An evaluation of past policies will be conducted to understand how they have influenced the current structure of the industry and gauge their effectiveness. Furthermore, this section will probe into potential future policy modifications and their subsequent effects on the floriculture sector.

### Past policies

Key past policies have been evaluated in terms of their effects on financial management, operational planning, and the overall viability of the industry. Research indicates that predominant areas of concern for flower farms include the financial implications of specific taxes and levies, the regulations concerning chemical usage, and the overall policy environment's support or lack thereof for the industry's advancement. By delineating the implications of these policies, this analysis identifies areas of potential refinement, with the aim of fostering the industry's sustainable growth.

### Taxes and levies

In the floriculture sector in Kenya, the imposition of various taxes and levies is a significant area of concern. A structured understanding of this taxation system is crucial, as it shapes the financial strategies of flower farms, impacting their operational sustainability and economic viability. The current taxation framework exerts substantial financial pressure on flower farms. This is particularly notable for farms whose operations span across multiple counties, leading to instances of duplicate taxation. Specifically, these farms are mandated to pay individual taxes to each county they operate in, in addition to the taxes levied by their home county. This extensive taxation applies not only to the production phase but also to transportation, resulting in multiple tax payments as the produce travels through different counties. This extensive and multi-layered approach to taxation significantly elevates operational expenses, potentially affecting the economic stability and profit margins of the flower farms.

The National Housing Development Fund introduced by the Finance Act, 2023, mandates a housing levy where both the employer and employee contribute 1.5% of the employee's monthly gross salary. The employer is responsible for remitting these contributions by the 9th day of the following month, starting from 1 July 2023. While the impact of the housing levy on the employees in the floriculture sector presents potential benefits

## 4.0

## 4.1

### 4.1.1

related to housing, it predominantly poses challenges related to reduced income, job satisfaction, and financial well-being. Employers and representative bodies will need to navigate these challenges carefully, prioritizing clear communication, worker welfare, and, where possible, exploring compensatory adjustments or support to mitigate the impact on the employees and hence, the communities.

The NSSF Retirement Policy necessitates compulsory contributions to the National Social Security Fund, imposing another layer of financial responsibility on employers while intending to secure the post-retirement phase of the employees. The NSSF is a government agency mandated to provide social security services to employees in Kenya. Initially, both employees and employers were each required to contribute 200 shillings to the NSSF, but a recent legislative act in February raised the employee's contribution to 600 shillings, with a cap set at 1080 shillings. This alteration implies that employees are now mandated to contribute more to the national social security fund than they were previously.

This policy intertwines additional costs with the benefit of providing a financial safety net for retirees, contributing to the overall complexity of the sector's operational environment.



Finally, the Water Bill in Kenya poses multifaceted implications for the floriculture sector, significantly impacting operational cost structures through variable water and sewerage charges, compounded by potential additional fees for late payments and service reconnections. The bill mandates meticulous consumption management, requiring farms to adopt stringent water management practices to regulate usage and manage associated costs proficiently. This necessitates a high degree of compliance, with regular monitoring and timely payments essential to avoid service disruptions and additional penalties. Furthermore, the prevailing water scarcity in Kenya accentuates the importance of water conservation within the sector, prompting the implementation of sustainable water utilization strategies and conservation measures, such as efficient irrigation systems and rainwater harvesting.



### **Instability and unpredictability in tax regime**

#### **4.1.2**

Beyond the immediate financial implications, the variability and instability inherent in the county tax structures are substantial operational hurdles. The inconsistent and frequently changing tax rates and additional levies introduce uncertainties that make precise financial planning and forecasting a challenging endeavor for farms. The constant need to adapt to new or revised tax structures makes the allocation of financial resources a complicated task, casting a shadow of uncertainty over the entire sector. This absence of a uniform and stable tax regime creates a sense of insecurity and diminishes the sector's attractiveness to investors. It fosters an environment of unpredictability, impacting the feasibility of long-term investments and expansions in the floriculture sector. In essence, the ever-evolving tax landscape necessitates continuous reassessment and adaptation of financial strategies by flower farms, emphasizing the need for a more streamlined and predictable taxation environment to facilitate stability and growth in the sector.

### **Bureaucratic hurdles**

#### **4.1.3**

The floriculture sector in Kenya is entangled within an extensive array of bureaucratic processes, wherein obtaining permits, licenses, and adherence to numerous regulations becomes a procedural norm. These bureaucratic undertakings have substantial ramifications on the operational and fiscal viability of flower farms, prompting a meticulous assessment of their varied impacts.

- **Securing Permits and Licenses:** The complexity inherent in administrative processes required to secure necessary permits and licenses poses significant challenges, leading to potential delays and operational disruptions in flower farms. These are not mere administrative hindrances but have consequential repercussions, affecting productivity and potentially diminishing profitability.
- **Regulatory Compliance:** Ensuring compliance with diverse regulations necessitates considerable resource allocation and can potentially compel farms to seek specialized expertise or advisory services to navigate the regulatory environment proficiently. This additional requirement incrementally increases operational expenses, impacting the fiscal stability of the sector.
- **Delayed Tax Refunds:** The prevalent delays in receiving tax refunds have resulted in strained financial planning for flower farms. The farms, entitled to refunds due to specific exemptions or overpayment, experience a disruption in their cash flows due to the prolonged refund processes. This protraction fosters a diminishing trust in governmental processes and may make farms hesitant about future investments and expansions.



*The complexity inherent in administrative processes required to secure necessary permits and licenses poses significant challenges, leading to potential delays and operational disruptions in flower farms*

### **Bureaucratic Implications on Foreign Investments**

The prevailing bureaucratic complexities coupled with duplicate taxes significantly impact the attractiveness of the sector to foreign investments. Investors prefer regions with stable, transparent, and efficient administrative and tax structures. The perceived ambiguities within Kenya's administrative and tax frameworks could potentially position the country as a less favorable destination for investment in the floriculture sector, leading to lost opportunities and hindered sectoral development.

**Recommendations for Enhancing Operational Environment** To create a more favorable business environment and address the identified challenges, it is crucial to streamline administrative processes, simplify existing tax structures, and ensure consistency in tax policies. Implementing a transparent and stable tax and administrative regime will not only mitigate the financial constraints experienced by flower farms but will also render the sector more appealing to foreign investors, promoting overall sectoral growth and sustainability in Kenya's floriculture industry.

**Implementation of a Single-Window System:** Establish a unified, single-window system for securing all required permits and licenses, drastically reducing the time, effort, and resources currently expended navigating through various departments and agencies. This approach ensures a faster, more efficient, and user-friendly process, enabling farms to commence operations swiftly and legally.

**Accelerate Tax Refund Processes:** Reform and expedite the tax refund process by implementing digital solutions and enhancing administrative efficiency, thus alleviating the financial strains caused by delayed refunds. Timely refunds will enable better financial planning and instill greater confidence in government processes among the farms.

## Chemical usage

The floriculture sector operates within a dynamic and meticulously regulated international environment, particularly due to the stringent regulatory framework instituted by the European Union regarding chemical usage. The imposition of these regulations represents a concerted effort to foster sustainable and environmentally friendly agricultural practices. However, the repercussions of these mandates are multifold and have necessitated substantial alterations in operational methodologies within the floriculture sector.

### **Transition to Bio-Chemicals and Associated Complications**

The EU's prohibitions on specified chemicals have engendered a paradigm shift towards the utilization of bio-chemicals, necessitating a radical reconfiguration of horticultural practices and inducing substantial increments in production expenditures. The procurement of bio-chemical alternatives, although eco-consciously optimal, is notably more financially taxing compared to conventional chemicals, often escalating costs by approximately 100%. Additionally, the enduring ramifications of this transition are not instantaneously discernible, and the efficacy of bio-chemicals is typically corroborated through prolonged application periods. This transition is further exacerbated by the prohibition on the importation of certain chemicals, which constrains the available alternatives and inadvertently inflates operational costs.



*The procurement of bio-chemical alternatives, although eco-consciously optimal, is notably more financially taxing compared to conventional chemicals, often escalating costs by approximately 100%.*

### **Implication of maximum residue limits**

The European Union has institutionalized Maximum Residue Limits (MRLs) specifying the permissible concentrations of chemical residues in agricultural commodities, inclusive of flowers. Compliance with these stipulated thresholds is imperative, as any contravention could culminate in the refusal of shipments at European borders, invoking substantial financial repercussions for the exporting entities. The enforcement of these MRLs mandates meticulous residue analyses on flower consignments, ensuring that the concentrations of chemical residues align with the EU's stringent standards. Any deviation from the stipulated MRLs could warrant the disposal or return of the shipments,

## 4.1.4

potentially incurring losses for the farms involved.

### **Compliance Measures and Certification**

To adhere to these stringent EU stipulations, Kenyan flower farms are compelled to undertake systematic and recurrent residue testing. This involves the extraction of samples from designated flower batches and subsequent laboratory evaluations to ascertain the levels of chemical residues present. Achieving and maintaining compliance is synonymous with obtaining certifications validating that the products conform to the EU's rigorous standards, a prerequisite for access to European markets. The necessity for consistent certification and compliance verification not only substantiates the quality and safety of the products but also reinforces the sector's credibility in international markets.

The detailed examination of the impacts of EU's regulations on chemical usage reveals a complex interplay between environmental considerations, operational adjustments, and financial implications. While the aspiration for enhanced environmental sustainability is commendable, the ensuing operational and financial strains underscore the need for balanced and supportive international regulatory frameworks. The analysis thus provides an objective foundation for further discourse on optimizing compliance strategies while ensuring the sustained resilience and growth of the floriculture sector within the ambit of international regulatory norms.

## Future policies

## 4.2

The floriculture sector finds itself navigating a climate of heightened uncertainty, primarily emanating from the anticipation of more rigorous regulatory interventions from European authorities. These anticipated changes span areas such as chemical usage, taxation alterations, and the imposition of more stringent pest-related restrictions. This spectrum of potential policy alterations has the sector exploring a plethora of strategies to mitigate the potential fallout and ensure the ongoing vitality and viability of the industry.

### **Augmenting operational flexibility**

## 4.2.1

In light of looming regulatory stringency, proactive adaptation and strategic foresight become paramount. The heightened regulatory scrutiny, particularly regarding chemical use and pest-related restrictions, threatens the seamless acceptance of shipments and poses operational hindrances, necessitating the deployment of innovative and robust countermeasures by Kenyan flower farms. One pivotal strategy is the adoption of hedging mechanisms and the diversification of product portfolios and target markets.



### Financial stability and diversion

Anticipating potential currency fluctuations, leveraging financial instruments to secure favorable exchange rates is critical, offering a shield against unfavorable economic shifts. Relying on fixed prices for indispensable inputs is another approach to maintain economic stability and predictability in operational expenditures. Diversification is crucial, not just financially but also in product offerings and target markets. Exploring and investing in a wider range of flower varieties and products equips farms with a diversified portfolio, providing a cushion against the potential impacts of specific regulatory constraints.

Broadening the horizon beyond European markets and targeting alternative destinations such as Asia, North America, or other African nations is a strategic imperative. This geographical diversification can alleviate the risks associated with policy-driven market restrictions, offering alternative revenue streams and reducing dependency on a singular market. The introduction of value-added products like dried flowers or essential oils represents another avenue to explore, potentially unlocking new market segments with less stringent regulatory landscapes.

### Synchronized advocacy and strategic policy influence

Navigating the intricacies of future policy landscapes necessitates an integrated and collaborative approach involving both farm owners and industry associations, with entities like the KFC playing a crucial role. This collaborative endeavor aims to synergize efforts across the industry to influence favorable policy outcomes.

Industry associations and individual entities must unite in their advocacy efforts, lobbying collectively for policies that are conducive to the growth and sustainability of the floriculture sector. The collaborative interaction among industry stakeholders facilitates a more robust and cohesive response to regulatory changes, allowing for the development of synergistic solutions and the sharing of best practices. The role of KFC is especially critical in this collaboration. It serves as a catalyst for influencing policies and fostering sustainability within the industry, ensuring that the collective voice of the sector is effectively represented in policy discussions.

KFC's active involvement in policy dialogues and its engagement with policymakers and regulatory bodies enable it to advocate for policies that are well-balanced and considerate of the industry's genuine needs and concerns. Its role is to ensure that policy formulations are informed by the practical realities and unique challenges of the floriculture sector, thus enabling the creation of an enabling environment that supports

### 4.2.2

the industry's growth and resilience.





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Anticipating potential currency fluctuations, leveraging financial instruments to secure favorable exchange rates is critical, offering a shield against unfavorable economic shifts.





**Navigating Policies: Challenges  
and Recommendations for  
Kenyan Flower Farms**



#### **PAST POLICY IMPACTS**

- TAXES AND LEVIES
- BUREAUCRATIC DELAYS



#### **FUTURE POLICY CONSIDERATIONS:**

- ANTICIPATED REGULATIONS: EU STANDARDS
- RECOMMENDATIONS: DIVERSIFICATION, HEDGING, EXPLORING NEW MARKETS



#### **COLLABORATIVE INITIATIVES:**

- ROLE OF INDUSTRY ASSOCIATIONS LIKE KFC



**05**

# **Risk Management**



## Risk management

Risk management is essential for safeguarding an organization's assets, ensuring sustainability, and optimizing opportunities. By identifying, assessing, and addressing potential threats, companies can proactively prepare for uncertainties and minimize adverse impacts. Effective risk management not only protects a business's bottom line but also strengthens its reputation and fosters trust among stakeholders. First the risks are identified that could possibly affect business and afterwards mitigation initiatives are proposed to minimize or leverage the impact of the risks

## Risk structure

The farms are exposed to a number of risks that could affect the farm's operations and financial stability. A robust risk management policy at the farm is advised to maintain a healthy business and protect the farm from negative impacts of external (extreme) events. Through interviews and market research the following risk management structure is defined:

## Market and economic risks

Like all business sectors, the floriculture sector is exposed to market movements and the economic state of the world at every level. The risks within this risk driver can impact the floriculture sector's balance sheet in a negative or positive way. The following sub-risk drivers are identified and carefully explained:

### Consumer product demand risk

Shifting consumer demands is a risk that all businesses are exposed to, consumers tend to follow trends and as such shift their demands to other products within the segment. Within the floriculture sector this translates to a demand shift between different crops, for example the demand for roses moving to spray roses. These demand shifts can have an impact on sale prices of flower farms' products and negatively or positively impact the revenue.

### Currency Risk

Most of the sales of flowers from Kenya are sold on international markets (>99%), these markets buy flowers in different currencies EUR, GBP and USD. Costs of the farms are distributed over the different currencies USD, GBP, EUR and KES. Since the income and expenses in these currencies do not always match, the incoming currencies need to be exchanged to match the currency distribution of the expenses. When one needs to exchange between currencies, the business is exposed to movements on foreign currency exchanges. Over the past years the farms have been exposed to a large amount

## 5.0

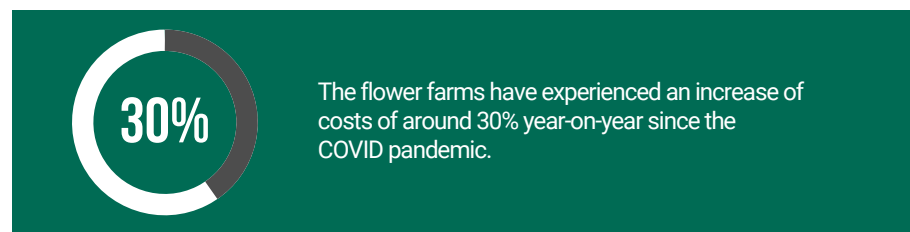
of impact, the EUR/USD has significantly decreased, and the KES/USD has even strongly decreased.

## Inflation Risk

The past years inflation has been a major subject in news articles, inflation rates have been skyrocketing. The floriculture sector has been exposed to a large amount of inflation risk, where the risk can be divided into two parts:

- **Cost Inflation:** Costs of the flower farm are exposed to inflation, the inputs necessary to grow flowers have been increasing strongly. Take for instance fertilizers, most of the products were produced in Ukraine but due to the ongoing war this supply has dropped out. Alternative suppliers had to be approached, to maintain high quality flowers, high quality fertilizers need to be used. These fertilizers came at a higher cost; therefore, these costs have risen strongly. The flower farms have experienced an increase of costs of around 30% year-on-year since the COVID pandemic.
- **Price Stagnation:** Inflation also has an indirect impact on flower prices and sales, the consumer is hit by the increase of living costs, therefore the consumer will tend to decrease its costs by saving on luxury products. As flowers are a luxury product, there is less demand for flowers in the current state of the market, resulting in a smaller price increase of flowers in comparison to the farms' costs.

These two impacts of inflation can affect the flower farms' businesses financially. Looking into the future, the inflation rates will likely not go down quickly and further hurt the flower farms.



## Government risks

All businesses are exposed to the taxes and levies enforced by the government, governments can introduce new policies impacting industries either negatively or positively. The regulator can introduce risks if there are regular changes to tax laws or policies or through political instability. The following sub-risk drivers are identified and carefully explained:

## 5.1.2



### **Political Instability Risk**

Every 5 years elections take place in Kenya, often resulting in some social instability, protests of supporters of the opposing party may show their dissatisfaction with the outcome through protests. During these protests local infrastructure where the protests are happening is disrupted, leading to transportation risks of the flowers. The last elections went very peacefully, however due to increasing living costs and introductions of new levies, large groups of inhabitants went out on the streets to protest against the current president. This led to multiple days where the infrastructure around Nairobi got disrupted, which led to transportation risks for the flower farms when transporting their harvest to JKIA Nairobi.

### **Tax Planning Risk**

The government has an annual budgetary process where taxes are reviewed, and new taxes or levies are introduced. Outside of this annual budgetary the government can introduce tax increases or new levies when there is the need for it. These spontaneous tax changes can have a negative impact both on the flower farms and the employees of the farms. Most taxes, levies and policies have a negative impact on the finances of the farm and its employees; profit margins and salary of the employees can decrease. With a record-breaking government debt in May 2023, the government is likely to introduce more tax increases and new levies to finance its debt payments, thus making tax planning a significant risk for the flower farms.

### **Tax Refunds Risk**

A large number of flower farms have been experiencing challenges trying to receive their VAT refund, sometimes leading to a 12-month suspension of the receivable. When a farm accounts for this tax refund into their balance sheet, this can lead to major problems. When costs are to be covered by the refund and the refund cannot be received, the farm needs to take loans or spend cash to cover its bills. This leads to an increase in eventual costs, interest on loans needs to be paid and taking into account that interest rates have been increasing over the past years, costs will increase more strongly.

### **Climate Risk**

With the ongoing climate change, businesses of which the production is dependent on the local climate can possibly suffer due to the changing environment. Flowers are strongly dependent on the characteristics of the local climate; if the environment of the flower farms changes too much, this could pose a risk to the growth of the flowers and other operations at the farm. The following sub-risk drivers are identified and carefully

explained:

### **Water Scarcity Risk**

Over the past years, dry spells have become more frequent and extreme, record-breaking droughts have been experienced in Kenya. Droughts affect the water availability at the farm, more water must be bought from government sources, increasing the costs of the farm. The flowers need daily water inputs to ensure the quality and health of the flowers, therefore water scarcity is a major risk to the farm. The future will possibly bring even more extended droughts and even less predictable rainfall patterns. Farms are required to adapt to these climate disruptions and invest in initiative to minimize the impact of water scarcity.

### **Extreme Hailstorms**

In the region of Mount Kenya, farms are experiencing negative impacts from extreme hailstorms that pose a threat to their harvest. Especially farms producing their flowers in the open field where the flowers do not have protection from greenhouses. One extreme hailstorm can destroy the farm's harvest and impact the farm's business massively.

### **Energy**

Kenya's energy production relies mostly on green resources, one of the major resources is hydro energy. Droughts impact the production of hydro energy within Kenya, impacting the availability of energy, this goes hand in hand with increasing energy prices. The flower farms require a large input of energy, for example for pumping the water through the farm. Increasing energy costs, increasing the costs of production resulting in smaller profit margins. This effect is a trigger for the floriculture sector to invest in reducing the energy reliance on governmental energy production.

### **Rising Temperatures**

It has already been shown that the average annual mean temperature has risen with 0.8 degrees within Kenya. The growth of the flowers relies on the temperatures within the climate where they are grown. When temperatures are rising, the quality of the flowers will be affected; higher temperatures result in shorter stems and smaller heads. Some farms that have been present for a longer period have already experienced the effects of the temperature rise on their crops. The forecast of climate change shows that temperatures will keep increasing with the current state of the world, pushing the farms to adapt to warmer climate circumstances.

### **Extreme Wind**

In the region of Lake Naivasha, the farms have been exposed to extreme winds, these winds can cause damage to the greenhouses. When a strong wind gets caught in the vent at the top of the greenhouse, the greenhouse can collapse and harm the harvest within that greenhouse. The winds can potentially destroy parts of the harvest of the farms, impacting the financials of the farms.

### **Market Demands**

Climate change is becoming a bigger subject each day, consumers are becoming more aware of the impacts of climate change and are shifting their demands to sustainable products. This demand can affect farms that are not in motion to becoming a sustainable business. Some markets will require reporting on the impact of the farm on the climate, and markets set up regulations to ensure that the products being sold at the market are sustainable. With climate change possibly worsening over the coming years, market demands and regulations on sustainability will become tighter and challenges farms to limit their impact on climate change to a minimum.

### **Risk mitigation**

Mitigation initiatives involve strategies designed to reduce the likelihood or impact of identified risks. By implementing preventative measures, monitoring systems, and response plans, organizations can navigate potential challenges more effectively. Such initiatives not only help in minimizing potential losses but also position the organization to capitalize on unforeseen opportunities that arise from a dynamic environment.

## **5.2**

### **Market and economical risks**

## **5.2.1**

#### *Consumer Product Demand Risk*

- **Portfolio Diversification:** A way of mitigating the risk of a decrease in sales is to diversify the flower portfolio, instead of solely producing roses one could invest in the production of spray roses or summer flowers. This way if there are shifts in consumer demands, one flower will lower in sales, but the other flower will rise in sales leading to the flowers evening each other out in sales. Through this initiative losses will be minimized, but not necessarily fully mitigated. However, this initiative does require a significant investment amount, one should account for research into the growing of the new crop, labor force training, land preparation and soil testing, marketing and distribution to the market. To diversify the portfolio with a new crop, a flower farm should consult with experts or others in the industry specialized on this new variety.
- **Continuous Market Research:** Adapting to market trends requires market research, once trends are developing, shifting your production to supply the trend is key. To

discover trends within the market a team should be set up to continuously analyze markets. The team should be able to discover new trends in sales, estimate revenue gains of new market opportunities and advise on scaling up or down production of different varieties. To develop this team, an investment of labor is required, this investment is a year-on-year cost. Another way of market research is hiring experts or consultants to perform market research. However, hiring these consultants or experts is more expensive on hourly wage but this will be just a one-time investment instead of obtaining a full new labor force within your business. Next to the research team, the flower should also account for investments in potential new crops to follow the uncovered market trends.

- **Market Diversification:** A significant number of trends are global, next to global trends flower farms are also exposed to market specific trends. To limit the exposure to market specific trends, a flower farm can diversify the distribution of its production to multiple markets. For instance, a flower farm selling on the European market can diversify by entering other markets like Japan, Australia or the Middle Eastern (be aware, the middle eastern market has shown some problematic challenges around payments). By applying market diversification, a negative trend in one market will only affect the total revenue as much as its revenue generated in that market. Nevertheless, entering a new market does contain some investment amount, elaborate research for a new market is required. The flower farm should investigate the profitability of the market and define marketing strategies and distribution methods to enter the new market. In comparison to the other two initiatives, this mitigation initiative has a lower investment amount.





## Market and economical risks (Continued)

### Currency Risk

**Natural Currency Hedging:** Since the costs of the flower farm are distributed in four currencies, EUR, USD, GBP and KES, the income could be similarly distributed such that all costs in each currency are covered by the incoming currencies. To cover the distribution of the costs, only the currencies EUR, GBP and USD can be covered since over 99% of the production is sold on international markets. Most flower farms sell their products on the European market, resulting in mostly EUR as the incoming currency, through market diversification farms can gain other currencies, and such a natural hedge can be constructed.

Markets that can be explored are for instance Japan, Australia, Asia, USA and the Middle East, these markets buy flowers with USD which can ultimately cover the flower farms' USD expenses. As discussed, market diversification requires proper market research into profitability, marketing and distribution. Market diversification can therefore be a more complex but a highly efficient method to lower exposure to currency risk.

**Derivatives Currency Hedging:** Another way of hedging currency risk is entering the derivatives market. Through options, currency risk can be managed against a fee, you'll give up some of the upside effects of currency trends but protect yourself from the downside effects. A strategy to minimize exposure to the downside effects is to buy a long-put option of the EUR/USD forex exchange. The effect of this hedging strategy is shown in Figure 6, where the dotted lines show the long-put option and the amount that will be hedged, and the blue solid line shows the resulting profit/losses of the hedged position against movements in EUR/USD. It can be seen that when the EUR/USD decreases the losses are capped at a constant level. However, when the EUR/USD increases the profit will be lower than initially anticipated without a hedge. A business can determine the amount of currency risk they would like to be exposed to. Hence a percentage of the capital that the business would like to be exposed to currency risk does not need to be covered by the hedge. A percentage of exposure needs to be determined that aligns with the business' core strategy, based on that percentage the amount of long put options can be bought at the broker. Take into account that hedging comes with a cost which is determined by the price of the put option, initially lowering your expected overall profit but limiting your downside currency risk.

### Inflation Risk

**Hydroponics:** Due to large increase of fertilizers, chemicals and water prices, hydroponics can be a lucrative investment for the flower farm. Switching to a closed environment introduces many advantages, water usage decreases, precise nutrient management resulting in lower consumption of fertilizers and by eliminating soil, soil-borne diseases and pests will also be eliminated, potentially lowering the costs of pest and diseases management. Through interviews, farms that have already implemented hydroponics mention that it has saved them around 30% on chemicals and fertilizers. On the other hand, switching to hydroponics requires a large investment amount, the investment can be offset to future taxes. With its new policy the investment can be offset by 50% in the first year and 25% percent of the investment amount each in the following 2 years.

- **Solar Panels:** As discussed during the climate assessment, solar panels are an attractive way of reducing the energy input at a flower farm. Since energy costs have increased significantly, next to reducing the carbon emissions of the flower farm, it can reduce its procurement costs by cutting a large amount of energy input from the net.
- **Water Reservoirs and Rainfall Harvesting:** Another initiative to minimize water usage at the farm is to invest in water reservoirs and rainfall harvesting. Increasing the size of water storage can prevent the farm from being reliant on the purchase of water during dry seasons. Optimizing rainfall harvest is also necessary to effectively make use of the extra water storage. Many farms are already investing in this initiative which shows the awareness of water shortage and costs by the flower farms.
- **Sea Freight:** Air freight has been a major cost for flower farms, which has experienced a big increase during the COVID pandemic and is coming down again but will probably not return to its pre-COVID prices. As discussed in the climate assessment, sea freight is a good alternative to decrease the flower farms' carbon emissions. Moreover, sea freight can make a big impact on decreasing your freight costs. However, a significant amount of research and distribution optimization is required to make transport via sea feasible. More testing is required from flower farms; collaboration between farms and researchers could help to speed up this process. Also, the buyers' side needs to be committed to accepting its role in this transition and create a sustainable demand for sea freight flowers. Perhaps sea freight is not an optimal solution at the moment, but in the future, sea freight can be a big factor in maintaining a sustainable business.

### *Inflation Risk (Continued)*

- **Workforce Optimization:** The amount of FTE needed for a minimum production amount can be reduced such that labor costs per production unit can be minimized. Through training in production processes, specializing the employees in their field of operation, productivity can be increased. Another method can be through a bonus system, targets can be set for production per employee or team, when targets are met every extra unit of production translates into a bonus on top of their salary. This way the employees are motivated to increase their productivity through a financial incentive. A flat management workforce can also result in beneficial effects, such as lower costs, faster decision-making and employee accountability. An optimization method best suited for a workforce at a farm depends on the business's strategy and the capabilities of the workforce.

## **Government Risk**

### Political Instability Risk

## **5.2.2**

- **Political Risk Insurance (PRI):** In Kenya's flower farming sector, the adoption of Political Risk Insurance offers several operational advantages. PRI provides a layer of protection that can potentially enhance investor confidence by mitigating unforeseen political risks. Financial institutions often consider PRI when evaluating lending or investment criteria, facilitating easier access to financing for insured businesses. Furthermore, in the context of Kenya's occasional political uncertainties, PRI provides coverage for disruptions and safeguards assets from political violence such as demonstrations. In the global market, businesses with PRI may be perceived as having a proactive approach to risk management, highlighting a commitment to ensuring business continuity in the face of political challenges. However, PRI comes at a price, premiums are charged based on the length of the contract and the risks that are covered.
- **Active Transport Planning:** Considering the potential for political unrest, flower farms should implement strong measures to ensure the safe transport of their produce and the safety of their workers during these events. By keeping a close watch on current events and collaborating with local officials, farms can navigate around areas that might be problematic. Such foresight can help prevent potential damage to the flowers and ensure the safety of all involved. Additionally, it would be prudent for these farms to develop backup plans. This could involve mapping out alternative routes to the airport and identifying storage facilities nearby. By taking these proactive steps, farms

can ensure that their flowers remain in prime condition for export, even in the face of unforeseen challenges.

### **Tax Refund Delay Risk**

**Tax Offsetting:** A tax refund that has not been refunded on the date of payment can hurt the cash flows of the farm. Through communication with the Kenya Revenue Authority, tax refunds that are overdue can be offset with taxes that have to be paid by the farm. However, not in all cases will the KRA agree to offset the taxes to the tax refund, to ensure this business should always try to be 'tax-compliant' to create goodwill.

### **Tax Planning Risk**

**Extra Capital Reserves:** The introduction of taxes on short notice has a direct effect on the cash flows and the balance sheet of the farm. When these taxes result in the event where farms cannot pay their bills, loans need to be secured at banks resulting in extra debt for the business. Extra capital reserves could help the farm provide for their financial obligations until the business has increased its income or decreased its costs without creating debt.

## **Climate Risk**

### Water Scarcity Risk

## **5.2.3**

- **Building Dams:** Dams act as life-saving reservoirs for flower farms. By capturing and storing water, they provide a consistent and vital water supply to the farm. However, constructing a dam is not a straightforward task. It involves planning, taking into account factors like the ideal site location, potential impacts on the environment, and the well-being of local ecosystems.
- **Increasing Water Storage:** Beyond dams, the need to store water efficiently has led farms to explore building water reservoirs, water tanks and underground cisterns. By boosting their storage capacity, farms can make the most of rainfall seasons, creating a protective buffer against any potential future water shortages. These storage systems come with their set of challenges, including the essential task of routine maintenance to prevent water contamination and the strategic placement of storage units to utilize gravitational flow through height differences.
- **Building Dams:** Dams act as life-saving reservoirs for flower farms. By capturing and storing water, they provide a consistent and vital water supply to the farm. However, constructing a dam is not a straightforward task. It involves planning, taking into account factors like the ideal site location, potential impacts on the environment, and the well-being of local ecosystems.

## Climate Risk (Continued)

### Water Scarcity Risk

- **Increasing Water Storage:** Beyond dams, the need to store water efficiently has led farms to explore building water reservoirs, water tanks and underground cisterns. By boosting their storage capacity, farms can make the most of rainfall seasons, creating a protective buffer against any potential future water shortages. These storage systems come with their set of challenges, including the essential task of routine maintenance to prevent water contamination and the strategic placement of storage units to utilize gravitational flow through height differences.
- **Hydroponics:** Hydroponics introduces an innovative way of growing plants without the traditional soil medium, instead using mineral nutrient solutions in water. It's a testament to efficiency, with systems using less water than conventional farming. Recycling water in this environment ensures there's minimal wastage. As water circulates, plants can absorb nutrients that they might've missed in the initial pass. Of course, this method demands monitoring to maintain balanced nutrient levels and prevent disease spread.
- **Optimizing Rainwater Collection:** Rainwater, with its purity, devoid of salts and harmful minerals, offers a treasure trove of benefits for farms. By channeling this natural resource from greenhouse roofs and other surfaces, farms can reduce their reliance on less reliable water sources. This collection process is not without its challenges. Regular cleaning of collection systems is necessary to prevent blockages and maintain the quality of the water. Proper storage ensures that this free of charge resource is kept in optimal condition until needed.
- **Drip Irrigation:** This method delivers water directly to the plant's roots, reducing evaporation and wastage. Drip irrigation can be more efficient than traditional watering methods, especially when combined with moisture sensors that determine when and how much to water.

### Extreme Hailstorms Risk

- **Hail Nets:** Hail nets, made from tough materials like polyethylene, offer a shield to plants from damaging hailstones. They not only absorb the hail's force but also allow sunlight to reach the flowers, ensuring they continue to thrive. Additionally, the nets serve a dual purpose: they moderate the environment below by diffusing sunlight, creating a cooler and more stable growth area. This is particularly beneficial in places with hot daytime temperatures. While setting up hail nets has a significant initial cost, the potential savings from avoiding damage during a hailstorm make it a worthy

long-term investment. In conclusion, hailstorms pose a real threat to Kenyan flower farms, but tools like hail nets provide a dependable line of defense, ensuring farmers can protect their crops and income.

- **Crop Insurance:** Crop insurance is a newly introduced product offered by insurers to address the financial implications of hailstorms. It provides compensation for losses incurred due to such weather events, which can help stabilize a farm's economic situation after damage. The coverage and terms vary based on the chosen policy. Additionally, some insurance providers may offer guidance on farming practices to mitigate risks. The decision to adopt crop insurance involves weighing the costs of the contract against potential losses from unpredictable hailstorms.

### Energy Risk

- **Solar Panels:** Increasing energy prices can be mitigated by production of energy at the farm, solar panels can be installed at the farm to replace some part of the reliance on energy prices. Due to Kenya's favorable climate solar panels offer an efficient way of producing green energy. Together with solar batteries, solar panels can provide an equally distributed amount of energy to the farm. However solar panels require a large investment amount, which is even more when solar batteries are acquired.
- **Hydropower:** For regions where there is a large amount of rainfall, hydropower can also be installed at the farm. Making use of the large amounts of rainfall and the height difference at the farm, hydro energy can be produced.



*Trop insurance is a newly introduced product offered by insurers to address the financial implications of hailstorms. It provides compensation for losses incurred due to such weather events, which can help stabilize a farm's economic situation after damage. The coverage and terms vary based on the chosen policy.*



## Extreme Wind Risk

- **Tree Planting:** Tree planting on and around farms significantly reduces the risk of damage from extreme winds due to a multitude of reasons. Trees, especially when planted in rows or in strategic patterns, act as natural windbreaks. They have the ability to slow down the force of the wind, reducing its direct impact on the greenhouses. In addition to physical barriers, trees create their own microclimates. They lead to environments with slightly higher humidity levels and cooler temperatures beneath and around them. For farms that have ponds, lakes, or other water bodies, trees offer another layer of protection. By breaking the force of the wind, they reduce its ability to create waves on these water surfaces. This is crucial as these waves can lead to bank erosion, which, if not controlled, could compromise the water bodies essential for irrigation.
- **Insurance:** Insurers offer a product to cover the farm's costs when greenhouses collapse, the harvest and the costs of the greenhouse are covered. When the farm is exposed to these extreme winds and the greenhouses are likely to collapse, insurance is an initiative that could prevent the farm from large costs/losses. The product comes with a price determined on the probability of such an event, with increasing frequency of extreme weather events due to climate change, prices of these products are likely to rise.

## Rising Temperatures Risk

- **Greenhouse Cooling:** Ensuring that the greenhouse is properly ventilated can make a big difference. Incorporating roof vents, side vents, or even roll-up sides will allow hot air to escape and invite cooler air in, naturally lowering the internal temperature. Evaporative cooling stands have shown a particularly effective method in hot climates. Systems such as wet walls or misting setups can be installed. As water from these systems evaporates, it naturally cools the surrounding environment. This cooling effect can be further amplified by using exhaust fans that not only expel hot air but also pull in the cooled, moist air, especially if positioned opposite wet walls. Regular temperature monitoring, whether manual or automated, is essential. By maintaining a live watch on internal temperatures, timely interventions can be made, ensuring the environment remains optimal for flower cultivation.
- **Investment in Land at a Higher Altitude:** Many flower species, sensitive to temperature shifts, can struggle in traditional growing environments. Relocating to higher altitudes offers these plants a cooler, more stable climate, which can lead to extended blooming periods and improved growth quality. In addition, many pests and

diseases that target flowers have specific temperature preferences. By moving cultivation to cooler high-altitude areas, there's potential to naturally reduce the occurrence of these pests and diseases. This can result in decreased need for chemical treatments, promoting a healthier cultivation environment and reducing costs. However, the initial investment can be considerable, given the costs of land acquisition and potentially building new infrastructure. Transportation logistics, crucial for the distribution of produce, can become more challenging, especially if the newly acquired regions are remote. Furthermore, while the cooler temperatures of higher altitudes may align with the needs of certain crops, these regions also present unique environmental factors, such as reduced oxygen levels and changes in UV radiation exposure. These factors necessitate an understanding of their impact on crop growth and may require adaptive agricultural practices.

- **New Crops:** As temperatures are increasing, the cultivation of flowers that are naturally resilient to hotter climates becomes more interesting. Flowers adapted to warmth not only have the capacity to withstand higher temperatures, but they also often require less water, making them ideal candidates for sustainable gardening and commercial cultivation in this changing environment. Switching to different flowers at a farm presents several challenges and is an expensive process. Transitioning requires a thorough understanding of the new flower's growth requirements. There may be a need for infrastructure modifications, like changes in irrigation systems or shading structures. The introduction of new flowers can also invite unfamiliar pests or diseases, necessitating alterations in pest management strategies.

## Sustainable Market Demands Risk

As discussed during the climate assessment, farms can adapt to current sustainability needs by investing in Sea Freight, Solar Panels, Hydropower and/or Carbon offsetting. All initiatives are worthwhile to invest in, having more positive effects next to minimizing the carbon footprint of the farm.



*Flowers adapted to warmth not only have the capacity to withstand higher temperatures, but they also often require less water, making them ideal candidates for sustainable gardening and commercial cultivation in this changing environment.*





**Mitigating Risks: Strategic  
Approaches for Kenyan Flower  
Farms**





**MARKET RISKS:**

- CONSUMER DEMAND, INFLATION, CURRENCY FLUCTUATIONS
- MITIGATION: DIVERSIFICATION, COST MANAGEMENT



**GOVERNMENTAL RISKS:**

- POLITICAL INSTABILITY, TAX DELAYS
- MITIGATION: INSURANCE, TAX PLANNING



**CLIMATE RISKS:**

- WATER SCARCITY, ENERGY COSTS, EXTREME WEATHER
- MITIGATION: INFRASTRUCTURE INVESTMENTS, SUSTAINABLE **PRACTICES**



**06**

# **Data Management**



## Data Management

6.0

A management tool to give insights into the farms operations and compare that to market averages through data analytics. By giving insight into the farms operations, farms can determine where improvements can be performed within their business, adjusting their strategy with data drive decisions.

Through KFC's audits already a lot of data is collected which could be incorporated into a management tool. The data can be expanded by requesting more relevant data; a template can be shared such that data supplied by the farms will have identical data properties.

## Tool Structure

6.1

The tool will be split up into three subsections, where relevant data will be shown: Financial/Economic Viability, Sustainability and Employee Welfare and Community Relations.

## Financial/Economic Viability

6.1.1

To ensure longevity in a volatile market, farms must have a clear picture of their financial health and strategies for growth.

- **Cost Movements:** Through integrating the costs of the farm for different cost categories of the farm and plotting this overtime; farms can get insight into their cost movements and trends. The costs should be split up into labor, freight, infrastructure, chemicals and fertilizers so farms can determine for what operations/products the farm is over- or underpaying. This way the farms get inside their outgoing cash flows, all costs should be provided in one currency such that prices can be easily compared and processed.
- **Market Access & Pricing:** Information about markets and the price flowers are selling at that market is interesting for a flower farm. Graphing of flower prices over time per market can give insight into market profitability. The farms can compare their prices to industry averages of the same market and other markets. Using this data, farms can determine if it will be profitable to enter new markets.

Key Data Points for Financial Health:

- Past and current costs per cost category of each farm
- Past and current pricing of each product of each farm per distribution market

## Sustainability

6.1.2

In today's context of heightened environmental awareness and global climate commitments, ensuring sustainability is not just a responsible choice but a competitive advantage.

- **Carbon Emissions Tracker:** Every farm contributes to carbon emissions in varying degrees, depending on its size, operations, and technology. By pinpointing specific emission sources, farms can undertake targeted, cost-effective initiatives to reduce their carbon footprint. Setting up future carbon emission targets and showing industry averages such that farms can benchmark their carbon emissions can be beneficial to a farm.

Emissions should be shown per category of the farm's operations, such as freight and energy, so the farm can determine where the farm possibly still cut emissions.

- **Flower Inputs:** Already shown in the sustainability report at the website of the Kenya Flower Council, water usage, fertilizer usage, chemical usage and beneficial insects can be implemented into the tool.

These metrics showcase the other sustainable practices at the farm, where farms can again benchmark their usages against industry averages. plans, organizations can navigate potential challenges more effectively. Such initiatives not only help in minimizing potential losses but also position the organization to capitalize on unforeseen opportunities that arise from a dynamic environment.

- **Sustainable Certifications:** Achieving recognized sustainability certifications is not just a badge of honor; it can provide access to premium markets and clients who prioritize sustainability. The management tool can show what number of farms are already certified.
- **Supply Chain Management:** Sustainability is not limited to the farm's boundaries. By assessing every partner in the supply chain for sustainable practices, farms ensure that their products truly embody environmental stewardship from seed to sale.

Key Data Points for Sustainability:

- Detailed emissions data segmented by farm operations
- Chemical usage at the farm
- Fertilizer usage at the farm
- Water usage at the farm
- Beneficial Insects located at the farm
- Profiles of all suppliers, including their environmental credentials and practices

### Employee Welfare and Community Relations

6.1.3

A motivated workforce and harmonious relations with the local community are essential for sustainable success.

- **Health & Safety Protocols:** An algorithmic review of past incidents can help forecast potential future risks. Pair this with evolving safety guidelines, and farms can create a robust, safe working environment.
- **Demographics:** In recent years employee demographics have become an important subject for businesses, trying to become an inclusive and diverse employer. Demographics of the employees should include gender, age, county of birth, county of residence, marital status, number of children and function level.
- **Fringe Benefits Analysis:** By comparing the benefits, the farm provides to regional and industry standards, it can attract and retain the best talent.
- **Community Engagement:** Tracking community engagement initiatives and investment ensures that the farm's growth is not at the local community's expense, fostering mutual growth and goodwill. to adopt crop insurance involves weighing the costs of the contract against potential losses from unpredictable hailstorms.

Key Data Points for Employee and Community Engagement:

- Detailed logs of past safety incidents, with analyses and corrective actions
- Demographics of the employees of the farm
- Benefits offered by the farm including the salary
- Investment amounts in community growth, categorized to education, infrastructure, food and water supply, health and other

### Constructing the Benchmark

6.2

To construct insightful benchmarking for farms to adjust their strategies, industry averages should be constructed. All numerical datapoints should be weighted to the size of a business, all numeric datapoints should therefore be weighted by the amount of revenue generated by the farm.

### Filtering

6.3

To get insight into farm related data, the farm should be able to filter on their product type, region and production size interval. This way the data is more relevant to the farm and offers more layers in the data. Within the tool the industry averages should then be calculated based on the filters applied by the user.

### Data Storage

6.4

The importance of securely storing sensitive data within an organization, especially when it pertains to financial records, sustainability reports, and employee data, cannot be overstated. This data is fundamental to an organization's operations and reputation. A lapse in data security can lead to significant financial repercussions, damage to the organization's reputation, and potential legal challenges. It should be ensured that the data can be stored securely and anonymity within the tool is guaranteed.

### Platform

6.5

A user friendly and modern platform to portray the data is an essential requirement, Microsoft offers an easy-to-use tooling app to analyze interactive data: Power BI. By connecting Power BI to a database, insights can be created in multiple sheets, each having their own category of data. The app is user friendly and allows hosts to create many insights in a fairly short amount of development time. The tool offers restricted filtering to specific users, ensuring a farm will only be able to see their specific data and an industry average.





A woman with braided hair, wearing a blue button-down shirt, is smiling and looking towards the camera. She is in a greenhouse or nursery setting, surrounded by various plants and flowers. In the background, another woman in a green shirt is working with plants. The scene is brightly lit, likely by natural light from the greenhouse structure.

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When a flower farm reaches carbon neutrality, the farm can consider entering the carbon credit market by selling its carbon capturing excess.



A photograph of two women in green uniforms working in a greenhouse. They are smiling and focused on their work with flowers. The woman on the left is using scissors to trim a stem of red flowers. The woman on the right is also smiling and working with flowers. In the background, other workers in green uniforms are visible, along with rows of plants and a bright window.

# Optimizing Operations: Data Management Solutions for Flower Farms



**SUSTAINABILITY TRACKING:**

- CARBON EMISSIONS, SUSTAINABLE CERTIFICATIONS



**FINANCIAL STABILITY:**

- COST MOVEMENT, MARKET PRICING



**EMPLOYEE AND COMMUNITY WELL-BEING:**

- HEALTH & SAFETY PROTOCOLS, COMMUNITY ENGAGEMENT



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