



Kingdom of the Netherlands



Investment Opportunities in the Rwandan Horticulture and Floriculture Sector

TRAIDE Rwanda



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Fact sheet Rwandan Horticulture and Floriculture sector

Rwanda has a competitive advantage for flori- and horticulture production thanks to its diverse, stable climatological conditions and rich water resources that allow for year-round production of fruits, vegetables and flowers.

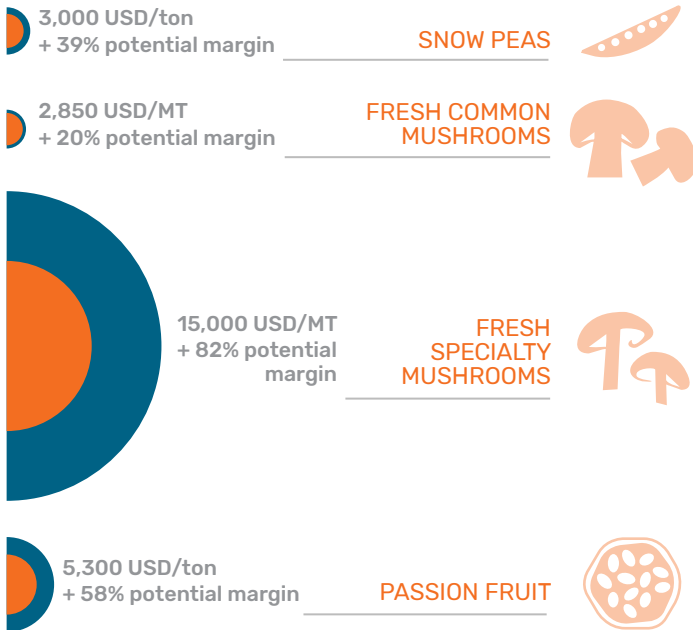


21 billion USD imports of fruit and veg from developing markets to

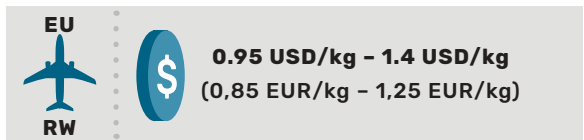
European market

Strong export opportunities

when European Union certification standards are met¹³:



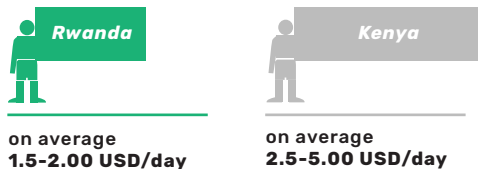
direct daily flights from Rwanda



445 habitants/km² in Rwanda >>>

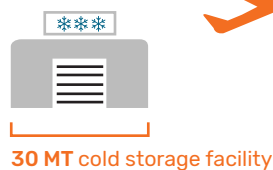


CASUAL LABOUR COSTS



KIGALI INTERNATIONAL AIRPORT

BUGESERA INTERNATIONAL AIRPORT *(under construction, expected 2020)*



Introduction

This document aims at providing insights in the horticulture and floriculture sector in Rwanda. It explains the characteristics of the country in terms of geography, climate and available infrastructures. Moreover, it presents an overview of possible investment opportunities as well as challenges.

The Government of Rwanda (GoR) is pursuing a strategy aimed at boosting volumes and value of exported goods. Rwanda is a relatively small, landlocked country with limited areas of flat land. Nonetheless, the country has a competitive advantage thanks to the presence of diverse, stable climatological zones and water resources that allow for year-round production. The goal is to focus on the cultivation of high value crops with a large demand on international markets. In this way, Rwanda can maximize export revenues on the basis of its competitive advantages.

This document will investigate opportunities for horticulture and floriculture products that match the growing conditions in Rwanda and offer high export revenues. Data was mostly obtained by means of a literature review and interviews with local and foreign entrepreneurs who have invested in the sector or in other business activities in the country.

RWANDAN CONTEXT^{1,2,3}

Rwanda is a landlocked country located in Eastern Africa that counts 12.4 million people and has one of the highest population densities in the region (445 habitants/km²). The Rwandan economy is largely dependent on the agriculture sector, which constitutes almost half of the exports and employs over two thirds of the population (70–80%). In 2017, the agricultural sector accounted for 31% of the Rwandan Gross Domestic Product, which was 9,509 billion RWF (9.26 billion EUR) in 2018.

In 2019, Rwanda confirmed its second place in Sub-Saharan Africa in the 'Ease of doing business' ranking by the World Bank. Moreover, the Rwandan Government has set several goals in its Vision 2020, such as moving from a low- to a middle-income country and transforming the agricultural sector from subsistence based to a knowledge-based sector. The government objective to increase export volumes and value is closely linked to these ambitions. Moreover, the GoR recognizes the important role of the private sector to reach these goals and hence, seeks to offer support and incentives to attract (foreign) investors.

Horticulture and floriculture in Rwanda^{4,5,6}

Subsistence agriculture makes up for the majority of agricultural activities practiced in Rwanda. However, some large producers operate in the country and sell their products either internally or on international markets. Rwanda offers multiple comparative advantages for horticulture and floriculture, including diversified climatological conditions and altitudes, fertile soils, rainfall and abundant water resources.

In the last few years, Kigali International Airport saw an increase of flight routines that facilitated an increase in fresh agriculture products exports from the country, mainly towards Europe and Asia (but also U.S.). Currently, around a dozen companies successfully grow their fruits, vegetables and flowers in Rwanda and export them to Europe, Middle East and Japan. Amongst others, they produce and export French beans, sugar snaps, snow peas, macadamia nuts, roses and cut flowers (summer flowers and specialty varieties). Horticulture exports contribute to 50% of non-traditional exports of Rwanda, part of which is regional export towards (mainly) the Democratic Republic of Congo, Burundi and South Sudan.

1. Topography and climate

Rwandan territory equals approximately 26,338 km² and is mostly covered by highlands and hills. Land elevation in the country ranges between 800 and 4,400 m.a.s.l. In the Eastern Province and City of Kigali, altitude ranges between 800 and 1,500 (with peaks of 1,600–1,700) m.a.s.l. The remaining areas of the country lie between 1,800 and 4,400 m.a.s.l.

In Rwanda, rainfall volumes vary greatly according to location and season. Generally, two rainy seasons affect the country; the heavy one starts in March and ends in May, and the short one runs from October until November. Total annual rainfalls range from 800 to 1,000 mm in the Eastern Province with some areas registering peaks of 1,140 mm. The map on the right (Figure 2) shows how mean annual rainfalls increase while moving towards the Western part of the country, where they reach 1,700 mm.

Figure 2. RWANDA RAINFALL MAP⁶

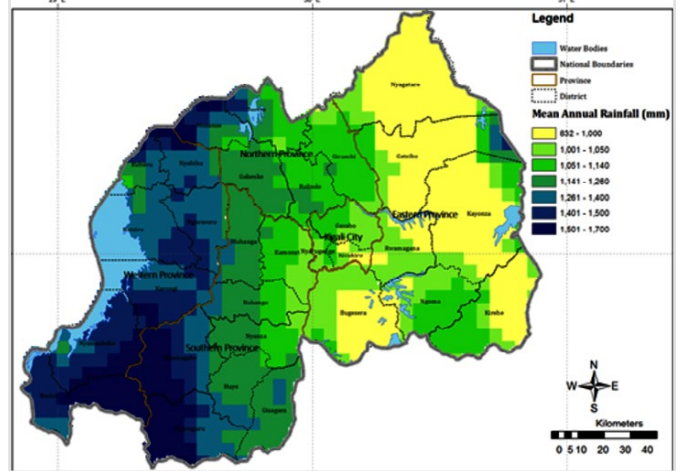


Figure 1. RWANDA ELEVATION MAP⁷

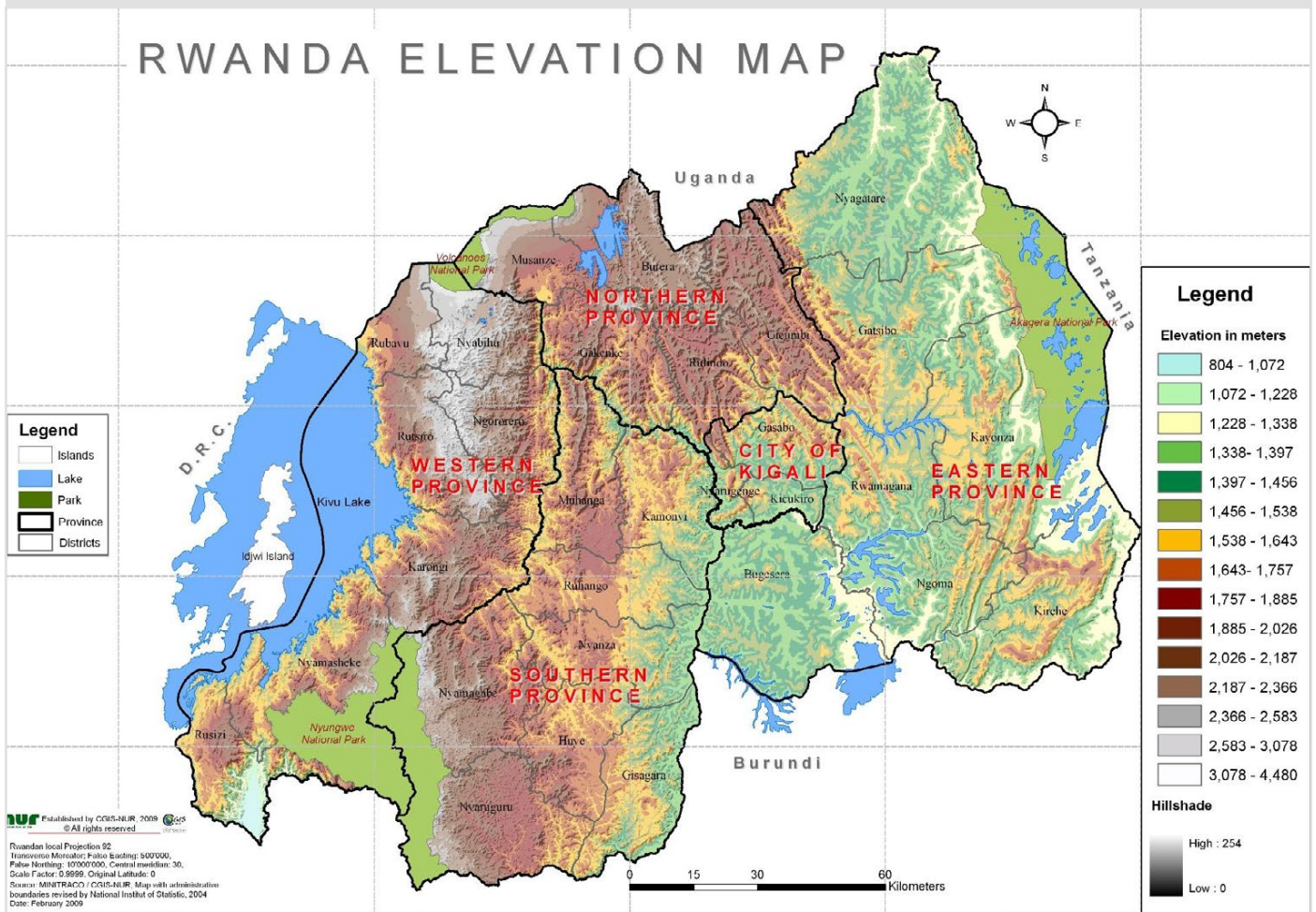


Figure 3. RWANDA AVERAGE TEMPERATURE MAP⁹

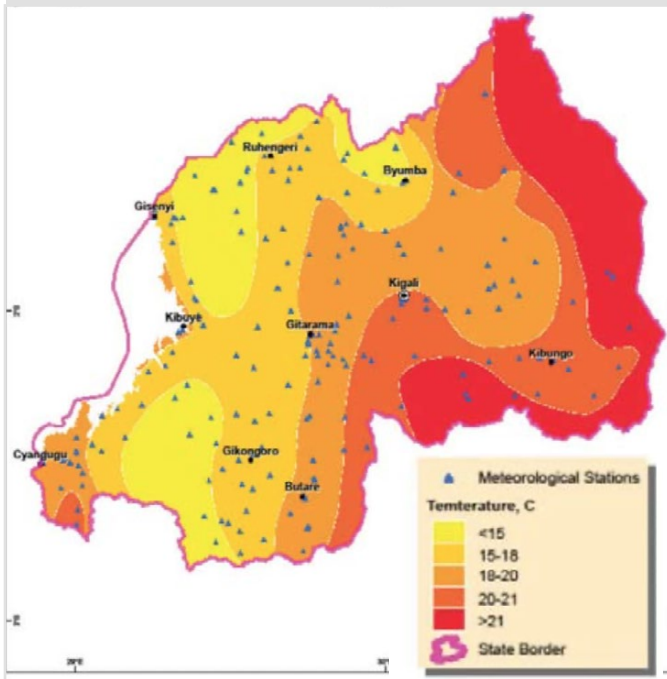
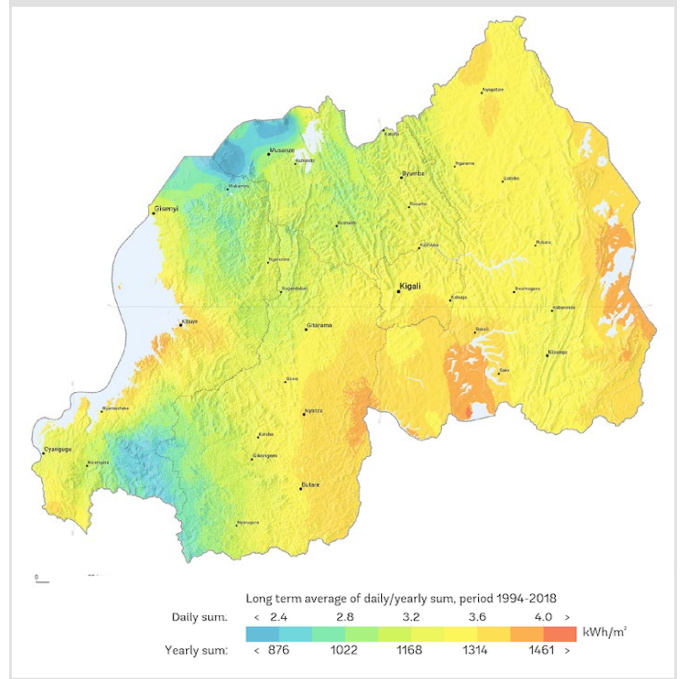


Figure 4. RWANDA AVERAGE DIRECT NORMAL IRRADIATION MAP¹⁰



The above maps indicate the average temperature in the country and the average direct normal irradiation (between 1994 and 2018, indicated in kWh/m²).

The combination of different climatic and geological conditions divide Rwanda in three main climatological zones, as shown in Table 1.

Table 1. ADAPTED FROM TIERRA BV (2013) AND USAID (2019)

Area	Average temperatures	Annual average rainfall	Climate
Western and northern highlands	15–17°C	1,200–1,600 mm	Cool and humid
Central plateau	17.5–19°C	1,000–1,100 mm	Temperate and humid
Eastern plateau	20–21°C	800–950 mm	Warm and dry

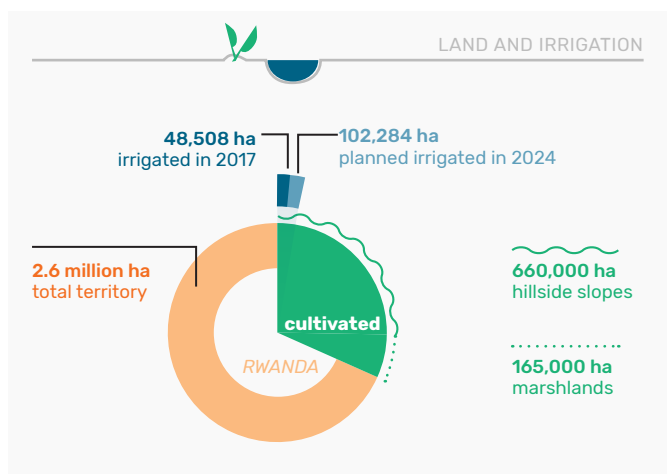
2. Infrastructures and enabling environment

LAND AND IRRIGATION^{9,18}

Land availability is undoubtedly one of the main challenges for Rwanda. However, this challenge is not prohibitive and the GoR is putting in effort to compile larger areas and facilitate land acquisition processes. Land can be either purchased or leased from private parties or, if state-owned, leased by the Government for long periods. The duration of lease agreements depends on the land use; typical lease agreements for agricultural use are for a period of 49 years and renewable.

Rwandan territory is about 2.6 million hectares, of which approximately one third is used for agriculture. The cultivated area is composed of hillside slopes (660,000 ha) and marshlands (165,000 ha). Hillside or sloped areas are usually not fully used in the dry season whereas marshlands are not fully used during the rainy seasons due to flooding.

These issues are addressed in the Rwanda Irrigation Master Plan, which aims to increase irrigated areas for cultivation from 48,508 ha in 2017 to 102,284 ha in 2024. The expansion will be realized through the use of different types of irrigation infrastructure such as rainwater harvesting ponds; surface storage reservoir for marshlands; hillside irrigation from surface waters (rivers and lakes) and groundwater.



COLD STORAGE AND FREIGHT^{11,12}

Currently, Kigali International Airport has a 30 MT cold storage facility. Larger and improved facilities are expected to be ready in early 2020, with the completion of the new International Airport in Bugesera. Moreover, NAEB runs a recently upgraded packhouse with 120 sqm cold rooms, 35 MT storage capacity and a large packing space that allows for simultaneous use by a maximum of six exporters. In addition to the packhouse at NAEB headquarters, four regional collection centers offer cold rooms, storage space of 7–10 MT capacity each, 5 grading tables each, weighing machines, water and electricity (including backup generators). These are located in Kamonyi, Ngoma, Rulindo and Musanze.

Air transport links Rwanda to a multitude of destinations across Europe, the Middle East and the African continent. There are direct daily flights to, amongst others, Amsterdam, London, Brussels, Istanbul, Doha, Dubai, Addis Ababa, Nairobi and Johannesburg. The average cargo capacity for intercontinental flights is 4–5 tons and 2–3 tons for regional flights. In January 2020, airfreight costs are 1.35 USD/kg (1.21 EUR) for shipments below 5 MT and 0.95 USD/kg (0.85 EUR) for shipments over 5 MT. A weekly cargo flight operates every Friday from Kigali to Liege (Belgium), with a capacity of 25 MT and priced 1.4 USD/kg (1.25 EUR).

EXPORT REQUIREMENTS FOR EUROPEAN UNION^{a,13,14}

The European Union (EU) imposes strict standards in terms of food safety, product quality and social, environmental and business compliance. Adherence is strictly monitored, and compliance can prove challenging for Rwandan exporters. In terms of food safety, there are maximum residue levels (MRLs), which need to be met, as well as maximum contaminant levels (substances unintentionally added to products/food). In terms of product quality, the EU imposes market standards for minimum quality and minimum maturity of fresh fruit and vegetables. These standards define, amongst others, the characteristics for 'Extra Class', Class I and Class II product categories. Usually, EU buyers prefer products categorized as 'Extra Class' or Class I. Moreover, GLOBAL G.A.P. certification is often requested on European markets. It focuses on food safety as well as the environment, labour conditions and product quality. Without such certification, it is basically impossible to sell to European supermarkets. Producers will end up selling products to alternative buyers for 20% less.

^a Specific export requirements per country (of origin and destination) and product (with product code) are available at <https://trade.ec.europa.eu/tradehelp/>

GOVERNMENT SUPPORT AND INCENTIVES^{11,12,15,16,17,18,19}

The Rwandan government aims to increase agricultural productivity with a special focus on export products in terms of volumes and value. The development of horticulture and floriculture sector would enable Rwanda to reach these objectives. Simultaneously, it would contribute to the diversification of the country's export base, which is currently largely composed of coffee and tea. The government has implemented several policies to attract (foreign) investments, amongst which are the following:

- Export processing zones: designed areas where companies can import duty free as long as the imports are used as inputs for the production of export products
- Preferential Corporate Income Tax rate of 15% provided that over 50% of the production is exported
- Preferential Corporate Income Tax rate of 0% if the company headquarters are based in Rwanda
- Exemption from Capital Gains Tax (currently 5% of the gain)
- Duty-free imports of agricultural inputs, such as seeds, fertilizers and pesticides
- Duty-free import of (farm) machinery, tools, irrigation equipment, and greenhouse materials
- Accelerated depreciation of 50% for new or used assets in year 1 for agro-processing and export-oriented businesses
- No export taxes or VAT on horticulture exports
- Rwanda Horticulture Working Group (RHWG); launched in 2015 by NAEB, RHWG works as an informal platform for dialogue between stakeholders in the sector and as a formal channel for discussions with the Government.

LABOUR^{2,17,20,21,22}

The labour force in Rwanda counts almost 3.8 million people. This is roughly one third of the Rwandan population of 12.2 million, that grows by 2.3% annually. The rural population is estimated at 83% of the total population. Therefore, the labour force is plentiful and labour costs in Rwanda are competitive in comparison to its neighbouring countries. In Rwanda, casual labour generally costs 1.5–2.00 USD/day (1.34–1.79 EUR), while specialist staff can be hired for 300–450 USD/month (268–403 EUR). In Kenya, the average daily wage is 2.50–5.00 USD (2.23–4.47 EUR).

In July 2019, the International Responsible Business Conduct Agreement for the Floriculture Sector (IMVO Convenant Sierteeltsector) was signed by several stakeholders of the Dutch floriculture sector and government institutions. The agreement safeguards a minimum wage (starting April 2020) for labourers working in the floriculture sector in countries where no legal minimum wage has been set. The minimum salary is equal to the extreme poverty line of the World Bank, namely: 1.90 USD/day (1.7 EUR). In case the World Bank raises the extreme poverty line, parties to the agreement will also raise the wages of their labourers accordingly.

DEVELOPMENT COOPERATION

Many donors consider horticulture value chain development an excellent way to stimulate economic growth in Rwanda while simultaneously reducing poverty and malnutrition. Development programs seek to identify and resolve market failures providing funds, agricultural expertise and market linkages. They are bridging the transition from aid to trade supporting private sector development. New and existing floriculture and horticulture companies in Rwanda can benefit from the resources and network of development organisations. Hence, it is highly recommended for companies to reach out to the Netherlands Embassy and its agricultural attaché to explore possibilities and tap into local expertise.

One example of a development program is HortInvest Rwanda funded by the Netherlands Embassy in Kigali. It is implemented by SNV, in partnership with Agriterra, Holland Greentech, IDH Sustainable Trade Initiative and CDI Wageningen. The project started in 2017 and will end in 2021. HortInvest focuses on supporting inclusive business models in the horticulture value chain, with a 50% co-funding grant and technical assistance. Moreover, production and supply improvements for domestic, regional and export markets are covered. For example, the NAEB packhouse and transformer were funded through HortInvest to support the export of horticulture produce. Training and support are also provided to farmers to enhance Good Agricultural Practices.

Please note that programs usually aim to maximize impact through maximization of the number of farmers reached. On the one hand, this requirement can complicate the business model. On the other hand, large-scale horticulture producers in Rwanda are likely to use outgrower schemes for scale considering the limited availability of land.



3. Opportunities in the horticulture and floriculture sector

In 2019, the Rwanda Development Board (RDB) conducted a market study to identify valuable horticulture products that can boost the country's exports. RDB mostly looked at demand and highlighted the potential of crops such as snow peas, French beans, passion fruits, mushrooms and flowers. A USAID-led study regarding horticulture value chains also published in 2019 showed similar results. The latter study also claims there is great potential in growing and exporting snow peas, passion fruits and mushrooms. Moreover, a study conducted by researchers from Delphy (Wageningen) in 2018 shows strawberries farming has strong potential in Rwanda. From internal research, it resulted that the same applies to raspberries and cape gooseberries.

SNOW PEAS AND FRENCH BEANS^{12,13,23,24,25}

The demand for snow peas on international markets is substantial all year round. In 2018, European demand reached 177,000 tonnes, while demand in the Middle East reached 12,000 tonnes. Demand for snow peas is high all year round, allowing Rwanda to export during the seven months in which snow peas are in season in the country (September to December and March to May). Moreover, snow peas are a good rotation crop for French beans, which currently is Rwanda's largest horticulture export crop by volume. French beans are also in high demand on the European market with a demand of 451,000 tonnes in 2018.

Both snow peas and French beans grow in fertile and drained soils, ideally at high altitudes with average daily temperature of 15–18°C (with minimum 7°C and maximum 24°C). Snow peas can also be grown at lower temperatures. For these reasons, the two vegetables are mostly grown in the Northern and Eastern Provinces. Seeds are often imported from Kenya at high prices.

Green beans that fail to meet quality standards required for export to Europe are easily sold on the local market, for roughly one third of the price (150–300 RWF/kg on Rwandan market versus 500–550 RWF/kg on international market, meaning 0.14–0.28 and 0.47–0.52 EUR/kg).

MUSHROOMS^{12,13}

Rwanda's agronomic conditions are ideal for growing different kinds of mushrooms, that usually require temperatures between 13 and 16°C and moist environments. Some of these are button mushrooms, oyster mushrooms and specialty mushrooms, such as shiitake and portobello. Mushroom farming is not land intensive, meaning producers in neighbouring countries with larger land areas available do not have a competitive advantage vis-à-vis Rwandan producers. By contrast, Rwandan producers have a competitive advantage in terms of labour costs, especially for shiitake mushroom farming, as hand picking is required.

Demand for mushrooms on the European and Middle East markets counted for 309,000 and 20,300 tonnes in 2018; the vast majority is imported from China. Interesting opportunities lie in the processing of mushrooms, especially in the drying of exotic varieties of which demand in Europe is growing.

Currently, the main producer of mushrooms and substrate in Rwanda is Kigali Farms, located in Musanze district. Kigali Farms was founded to be a social enterprise with the aim of reducing malnutrition in Rwanda's countryside. Therefore, the farm is not involved in or aiming at international export activities. Kigali Farms produces button and oyster mushrooms for the domestic market. However, the products are not well known in the country and often too expensive for the majority of Rwandans. Consequently, 70% of the volumes produced are exported to Kenya.

At the moment, any Rwandan mushroom producers can easily export products of lower grade to Kenya, where the current production equals 500 tonnes a year (of which 476 are button mushroom) whilst demand is twice as big: 1200 tonnes. Moreover, labour costs in Rwanda are substantially lower compared to Kenya, enhancing the competitiveness of Rwandan mushrooms on the Kenyan market in terms of pricing.





PASSION FRUITS^{12,13}

In 2018, the demand for passion fruits in Europe reached 79,000 tonnes. Several varieties of passion fruit are cultivated across the globe and used for different purposes; depending on their sweetness and acidity they can be used for fresh consumption or processed into puree and juices. The purple variety grown in Rwanda is mostly consumed fresh and is the most popular variety in Europe.

The ideal growing conditions for passion fruits are average daily temperatures between 21 and 25°C; annual rainfall levels above 1,200 mm; well-drained soils and altitude between 1,200 and 2,000 m.a.s.l. Passion fruit grows in climbing vines, and preferably in flat land areas, but low slope areas are also suitable. Rwamagana (Eastern Province), Nyagatare (Eastern Province), Rusizi, Nyamagabe (Southern Province) and Gasabo Districts (Kigali Province) have been identified as most suitable areas for passion fruit farming.

In Rwanda, passion fruits are in season from April to August and from October to December. These periods coincide with the low season in Kenya and South Africa. Combined, Kenya and South Africa supply 24% of all passion fruits imported by the European markets. Rwanda production can compete covering periods when Kenya and South Africa fail to meet demand.

Passion fruits are widely popular in Rwanda and neighbouring countries, such as the Democratic Republic of the Congo and Uganda, that account respectively for 28 and 33% of monthly exports from Rwanda. Therefore, passion fruit growers can easily sell their products on regional or domestic market in case part of the production does not meet international export standards.

STRAWBERRIES^{26,27,28,29}

Ideally, strawberries grow in well-drained fertile soils, preferably sandy, humus-rich and slightly acidic. The climate should be temperate, rainfall should be uniform and cultivated areas are to be well protected from wind. Strawberry plants are highly sensitive to root rot, therefore drip irrigation is advised, as well as avoiding heavy rainfalls. Protection from wind can be obtained either with shelter belts (planting trees or shrubs as windbreak) or with protective structures such as mini-tunnels and greenhouses.

Strawberry varieties can be grouped in three categories based on their response towards daylight hours (photoperiod). These are called June-bearers (short-day plants), ever-bearers (either long-day or day-neutral plants) and day-neutrals. June-bearers only induce flowers with the photoperiod is less than 12–14 hours and temperatures below 15°C. In tropical climates, shorter photoperiods and higher temperatures can still induce flowers. Ever-bearers varieties can be long-day or day-neutral, depending on the temperature. With temperatures below 10°C, they are day-neutral. With temperatures between 10 and 27°C, ever-bearers induce flowers both under short-day and long-day circumstances. With temperatures over 27°C, ever-bearer varieties induce flowers when the photoperiod is more than 12–14 hours. The production of flowers in day-neutral varieties happens regardless of the length of the photoperiod, provided that temperatures are comprised between 20 and 30°C. Given the diverse combinations of climatological and geographical conditions present in Rwanda, several varieties from all three categories can be grown, such as *Aiko*, *Chandler*, *Douglas* and *Fern*.

Strawberries are currently grown in the Northern and Western provinces of Rwanda. They are often intercropped with grapes and oranges. Specifically, there is a farmer cooperative in Rutsiro district (Western Province), which reports harvesting 2 tonnes per week (in two harvests per week). The cooperative sells the strawberries at 1,000 RWF/kg (0.95 EUR), mostly to a processing factory in Karongi district, which transforms the fruits into jam. The existence of a processing factory in Rwanda supports the use of lower-grade products unsuitable for export.

RASPBERRIES^{30,31,32,33}

Similar to strawberries, raspberries grow best in slightly acidic fertile soils and need well drained soil, as they easily suffer from root rot. Raspberry plants are quite sensitive to wind but can be grown in colder climates at higher altitudes. Excessive rainfalls undermine the survival of the brambles. Raspberry varieties are usually divided into two categories: summer-bearing and fall- (or ever-) bearing. In summer-bearing varieties, in the first year the cane grows and produces leaves. In the second year, canes will produce fruit and die after harvest. Fall-bearing raspberry plants produce fruit already in their first year on the first-year canes. During winter, the tops of such canes will die, but new flower buds will grow on them below the dead tops. Raspberry farming requires frequent pruning of the brambles, and fruits are to be picked every 2 days. Raspberry farming therefore supports a large request for seasonal work. There is currently no evidence of raspberries being produced in Rwanda.

In 2016, the European Union consumed 16,800 tonnes of raspberries, mainly grown in Morocco (December and January), Poland, Serbia, Spain, the Netherlands and Belgium (rest of the year). Other suppliers include Mexico and South Africa. The majority of South African raspberries are exported to the United Kingdom (80%), to the Middle East and to other European countries.

Considering the growing European demand, future Rwandan producers, who are able to meet export standards, should face no difficulty to find buyers for their products. Nonetheless, raspberries are very delicate fruits. Therefore, they need proper handling during all phases of farming and exporting. Special packaging is required to prevent damage and losses. Moreover, considering low popularity and diffusion of raspberries in Rwanda, exporters risk encountering difficulties, should they need to sell products of lower grades on the domestic market. In order to properly assess the feasibility of raspberry growing and exporting in Rwanda, more research is needed.

CAPE GOOSEBERRIES^{34,35}

Cape gooseberries grow well in drained soils, at different altitudes (750–3000 m.a.s.l. ca.) and with temperatures up to 30°C. Cape gooseberries are already grown and exported in small quantities in Rwanda. Globally, the farming and export of this group is largely dominated by Colombia, but its popularity is on the rise. Therefore, those who would grow cape gooseberries in Rwanda for export towards Europe will easily get a share of the market.

FLOWERS^{6,11,12,17,36}

In 2018, demand for cut flowers equalled 309,000 tonnes in the EU and 20,300 tonnes in the Middle East. At the moment, Rwanda mainly exports cut roses, and some smaller volumes of *Arabicum*, *Agapanthus* & *White Arums*. Moreover, pyrethrum is widely grown in the country.

The GoR strongly believes in the potential of floriculture as a contributor to export volumes and economy. It was decided to first develop the value chain before involving private investors, resulting in the founding of Bella Flowers. Nowadays, Bella Flowers is a fully functional flower farm that extends for 35 ha on the shores of Lake Muhazi. Several varieties of head size cut roses produced in the farm have been exported to Europe since 2016. Adjacent to Bella Flowers, 65 ha of land are available for expansion of the flower farm. NAEB is actively seeking for investors interested in the purchase or long-term lease of Bella Flowers and adjacent land.

Rwanda has optimal conditions for flower farming, thanks to the different altitudes, fertile soils, abundant rainfalls and temperate climate. Rwanda offers especially favourable conditions for the growing of intermediate roses, carnations and summer flowers. Varieties of summer flowers that can be grown in Rwanda are: *Agapanthus blue & white*, *Tuberose*, *Erygium*, *White arum*, *Ornis (Ornithogalum)*, *Mollucella*, *Craspedia*, *Ami visnaga*, *Crocasmia*, *Arabicum*, *Buplerium* and *Carthamus*. Rwanda might however encounter difficulties when competing with well-established producers in the region. High altitude ranges are required for the slower growth of high-quality roses. In Rwanda, rainfall and cloudiness levels are often too high in these areas. Kenyan and Ethiopian producers seem to have a competitive advantage vis-à-vis Rwandan flower farms both in terms of quality and cost. Though labour costs are low, the lack of a skilled and trained workforce might pose another challenge.



INFRASTRUCTURE¹²

As seen in previous sections, Rwandan horticulture and floriculture growers face several challenges, and would highly benefit from market entries by actors with investment capital, experience and capacity. Therefore, current challenges can be transformed into opportunities for investors. The main issues identified are inadequate cold chain facilities, lack of packaging industry, lack of affordable and good quality inputs, inadequate farmers' skills and difficulties in procuring greenhouses.

NAEB has put in great effort to set up a proper cold chain – with cold trucks and cold storages in several Provinces of the country. Nevertheless, it must be noted that existing public cooling facilities cannot facilitate high volume exports due to a lack of scale. Available storage and cold transport facilities are frequently running at maximum capacity. New investments in horticulture and floriculture will require further expansion of the existing cold chain. Export producers may consider building their own facilities; however, this requires a considerable initial investment. Alternatively, an experienced cold chain logistics company should consider entering Rwanda establishing commercial facilities to support development of significant economies of scale. This company can also introduce blast freezers, which are required for the export of fragile, high-value horticulture crops like raspberries.

In 2008, Rwanda banned the use of plastic bags and packaging. Such ban poses risks for horticulture and floriculture export, as a proper (often plastic) packaging is required in order to export goods to Europe. However, exemptions are possible and therefore it is recommended to negotiate specific conditions with the GoR regarding packaging needed in export activities. The construction of a new packhouse (possibly an aggregator) – in addition to the one set up and ran by NAEB - would very much benefit the sector.

High-quality inputs are essential for large and consistent yields suitable for export. In Rwanda, it can sometimes prove difficult to obtain the sufficient amount of quality seeds at an affordable price. Ideally, a seed producer would enter the Rwandan market, first importing material and subsequently continuing with seed production in Rwanda. Local seed production and, possibly, plant breeding practices would improve local adaptation of varieties resulting in higher yielding and more vigorous varieties. Moreover, this development can offer opportunities for spill-over effects in terms of farmer livelihoods and (technical) knowledge transfers. Outgrowing schemes offer many opportunities to realise knowledge transfers and enhance prosperity of local communities.

Another fundamental challenge in the Rwandan horticulture and floriculture sector is technical expertise and experience. Farmers practicing subsistence agriculture will likely need training to obtain the required knowledge and skills to grow and handle certain high-value crops. Crops discussed in the previous sections fall into this category. Large horticulture and floriculture investments will need to be paired with training. Possibly, training programs can be developed and implemented with the support of development organizations and/or extension services.

Finally, certain crops and flowers will benefit from or require the use of greenhouses. The use of greenhouses in the country is not yet popular and there is no evidence of Rwandan companies manufacturing advanced greenhouses. Horti- or floriculture investors can import greenhouses themselves, make use of established importers or lobby for a market entry of an experienced manufacturer. A manufacturer can either produce locally or import greenhouses on a large-scale. Moreover, it can team up with clients and/or extension services to provide training on the potential benefits and ideal conditions for greenhouse farming.



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