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# Horticulture and floriculture in Rwanda

Identification of focus areas for sector development

Youri Dijkxhoorn, Yeray Saavedra Gonzalez and Lucas Judge

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Youri Dijkxhoorn<sup>1</sup>, Yeray Saavedra Gonzalez<sup>2</sup> and Lucas Judge<sup>1</sup>

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LEI Wageningen UR

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MEMORANDUM

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This report describes the domestic and export-orientated horticulture and floriculture sector in Rwanda. It gives directions for sector development. The domestic horticulture sector in Rwanda provides great opportunities for development since domestic and regional consumption of fresh fruits and vegetables is increasing and as the population will urbanise. The export of fruits and vegetables can be further developed however challenges need to be overcome and are discussed in this study.

The report could be used as an input by the Dutch Embassy in Rwanda for the design of the 2016-2020 food security programme, as well as to identify possible government-supported programmes aiming at the promoting exports from Rwanda to the European Union (EU).

Key words: horticulture, floriculture, export, value chain, sector development, fruits and vegetables.

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# Contents

	<b>Preface</b>	<b>5</b>
	<b>Summary</b>	<b>6</b>
	S.1 Key findings	6
	S.2 Approach	6
	<b>Acronyms and abbreviations</b>	<b>7</b>
<b>1</b>	<b>Introduction</b>	<b>8</b>
	1.1 Introduction	8
	1.2 Objective	9
	1.3 Reading guide	9
<b>2</b>	<b>Method</b>	<b>10</b>
	2.1 Desk-study	10
	2.2 Field work and strategic workshop	10
<b>3</b>	<b>The business climate</b>	<b>11</b>
	3.1 Investment procedures	11
	3.2 Fiscal and non-fiscal investment incentives	11
	3.3 Investment protection	13
	3.4 Plant breeders rights	14
<b>4</b>	<b>Domestic and regional horticultural markets</b>	<b>15</b>
	4.1 Horticulture in Rwanda	15
	4.1.1 Production	15
	4.1.2 Seasons and protected cultivation	16
	4.2 Area for production and main crops	16
	4.2.1 Fruits	16
	4.2.2 Vegetables	17
	4.2.3 Flowers	18
	4.2.4 Honey	18
	4.3 Import	19
	4.4 Value chain map	20
	4.5 Key actors and activities in the domestic market	21
	4.5.1 Production: farmers and cooperatives	21
	4.5.2 Trade: wholesale and rural outlets	22
	4.5.3 Retail: retailers, hotels and restaurants	22
	4.5.4 Domestic market	23
	4.5.5 Regional market	23
	4.6 Enablers	24
	4.6.1 Government of Rwanda	24
	4.6.2 USAID	24
	4.6.3 Dutch Government (EKN)	24
	4.6.4 Extension services	25
	4.7 Supporters	25
	4.8 Logistics	26
	4.9 Post-harvest losses	26
	4.10 Structure and governance	27

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4.11	Major constraints and opportunities	27
<b>5</b>	<b>Export market</b>	<b>29</b>
5.1	Introduction	29
5.2	Trade	29
5.2.1	Trade schemes available	29
5.2.2	Export	30
5.3	Market channels for fruits, vegetables and cut flowers in Europe	31
5.3.1	Market requirements for fruits, vegetables and cut flowers	32
5.3.2	Insights into the European Market by targeted product	33
5.3.3	Cut flower production for export	35
5.4	Value chain map	35
5.5	Key actors and activities	36
5.5.1	Production: farmers, out growers and exporters	36
5.5.2	Trade: importers	37
5.5.3	Retailers in the export market	37
5.5.4	Enablers	38
5.6	Supporters	39
5.7	Logistics	40
5.8	Structure and governance	41
5.9	Major constraints and opportunities	41
5.9.1	Major constrains and opportunities for the fruits and vegetables	41
5.9.2	Major constraints and opportunities for flowers	43
<b>6</b>	<b>Conclusion</b>	<b>44</b>
6.1	Conclusion	44
6.2	Challenges	44
6.3	Road map: possible solutions and support actions	45
6.4	Opportunities for the Dutch private sector	46
	<b>References and websites</b>	<b>47</b>
	<b>Appendix 1 List of people interviewed and participants of the workshop</b>	<b>48</b>
	<b>Appendix 2 Benchmark of yields of Rwanda and its neighbouring countries (tonnes per ha)</b>	<b>49</b>

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# Preface

This report, 'Horticulture and floriculture in Rwanda: Identification of focus areas for sector development', serves as a guide for Dutch exporters, importers and investors to assess and benefit from the agribusiness opportunities in developing the Rwanda horticulture and floriculture value chains. The study follows a Value Chain (VC) approach. For the purposes of this study the horticulture sector is considered to be the subsectors fresh fruits, vegetables and floriculture (cut flowers).

The agricultural sector is a large contributor to Rwanda's national economy. The development of a commercial horticultural sector (including floriculture) has been identified as a priority by the Rwandese government with a dual focus of increasing the production and simultaneously supporting the trade and export. Rwanda has several favourable conditions for horticulture production such as a mild climate, sufficient water, sufficient labour, growing demand due to growing middle class and urban population. This provides opportunities in the value chain such as the development of added value products and services in areas such as processing, cold chain logistics and infrastructure (e.g. cold stores, packaging).

The objectives of this study are:

- To provide an overview of the horticultural and floricultural value chains in Rwanda (actors and stakeholders, organisational structure and governance, bottlenecks, risks, and opportunities in terms of trade and local development).
- To provide stakeholders throughout the entire value chain, practical information on the growth and trade potential of Rwandese horticulture and floriculture.

The study was commissioned by the Embassy of the Kingdom of the Netherlands in Rwanda in cooperation with the Centre for the Promotion of Imports from Developing Countries (CBI) and financed by the Netherlands Enterprise Agency (RVO). The report could be used to identify possible (government and/or private sector supported) activities aiming at the development of the sub-sectors in Rwanda, in the context of local, regional and international markets.

Teddie Muffels  
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# Summary

## S.1 Key findings

- The domestic horticulture sector in Rwanda provides great opportunities for development since domestic and regional consumption of fresh fruits and vegetables is increasing as the population will urbanise.
- Export of fruits and vegetables can be further developed since some crops produced in Rwanda are in high demand at the international market, but before gearing up the export some serious challenges need to be overcome.
- Exporting flowers from Rwanda looks feasible considering the climate, but faces constraints in terms of competitiveness from the current regional exporters of flowers.
- The Dutch horticulture supply industry can contribute to the further development of Rwanda's horticulture domestic and export sector. Moreover, sourcing of fresh fruits and vegetables for the EU market may offer opportunities in the long run. There are also investment opportunities for experienced flower exporters.

## S.2 Approach

The study follows a Value Chain (VC) approach. For the purposes of this study the horticulture sector is considered to consist of the subsectors fresh fruits, vegetables and floriculture (cut flowers).

The first step was a desk-study to review the inventory of recent studies on horticulture in Rwanda. The key lessons learned and recommendations from these earlier studies provide the foundation for the further development of this VC Analysis.

The second phase of the analysis consists of field work both in the Netherlands and Rwanda. In the Netherlands various horticulture and floriculture value chain stakeholders with knowledge and experience in Rwanda were interviewed (e.g. inputs suppliers, knowledge suppliers, logistic service providers and import companies).

The study was commissioned and financed by the Netherlands Enterprise Agency (RVO). The report could be used as an input by the Dutch Embassy in Rwanda for the design of the 2016-2020 food security programme, as well as to identify possible government-supported programme aiming at the promoting exports from Rwanda to the European Union (EU).

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# Acronyms and abbreviations

ATI	African Trade Insurance Agency
BDF	Development Bank of Rwanda
BIT	Bilateral Investment Treaties
BIT	Bilateral Investment Treaty
CBI	Centre for the promotion of import from developing countries
CIF	Cost, Insurance and Freight
COMESA	Common market for Eastern and Southern Africa
DRC	Democratic Republic of the Congo
EAC	East African Community
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FoB	Free on Board
GAP	Good Agriculture Practices
GoR	Government of Rwanda
ICSID	International Centre for the Settlement of Investment Disputes
KIAC	Kigali International Arbitration Centre
MASP	Multi Annual Strategic Plan
MIGA	Multilateral Investment Guarantee Agency
NAEB	National Agriculture Export Board
NBR	National Bank of Rwanda
PSI	Policy Support Instrument
RDB	Rwanda Development Board
RHOS	Rwanda Horticulture Organization Survey
RNIS	Rwanda National Institute of Statistics
RWF	Rwanda Franc
SEZ	Special Economic Zone
ToR	Terms of Reference
UPOV	International Union for the Protection of New Varieties of Plants
USD	United States Dollar
VAT	Value-added Tax
VC	Value Chain
VCA	Value Chain Analysis
WFP	World Food Program



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# 1 Introduction

## 1.1 Introduction

Rwanda is one of the fastest growing economies in Sub Saharan Africa. Although still poor and mostly agricultural (90% of the population is engaged in agriculture), Rwanda has made significant progress in recent years. According to World Bank figures, GDP has rebounded with an average annual growth rate of 7 to 8% since 2003 with inflation reduced to single digits. Despite these achievements, a significant share of the population still live below the official poverty line: 45% currently, compared to 57% in 2006.

Rwanda is trying to overcome the limitations of its small, landlocked economy by leveraging regional trade. Rwanda joined the East African Community (EAC) in 2007 and is aligning its budget, trade, and immigration policies with its regional partners. The Government of Rwanda (GoR) has embraced an expansionary fiscal policy to reduce poverty by improving education, infrastructure, and foreign and domestic investment and is pursuing market-oriented reforms. Unfortunately, energy shortages, instability in neighbouring countries and a lack of adequate transportation infrastructure (especially to regional neighbours) continue to handicap the growth of the private sector.

The agricultural sector is a large contributor to Rwanda's national economy. A significant share of this contribution is coming from the horticultural sector. The GoR has a strong focus on increasing horticultural production and is simultaneously supporting the development of the export market (MINICOM, 2011). Rwanda presents several favourable conditions for horticulture production:

- Mild climate
- Sufficient water
- Increasing population.

Rwanda has a mild tropical highland climate, suitable for horticulture production, with lower temperatures than are typical for equatorial countries because of its high elevation. Kigali, in the centre of the country, has a daily temperature range of between 12 and 27°C with little variation throughout the year.

Rwanda has sufficient water. There are two rainy seasons: the first runs from February to June and the second from September to December. These are separated by two dry seasons: the major one from June to September, during which there is often no rain at all, and a shorter and less severe dry season from December to February. Rainfall varies geographically, with the west and northwest of the country receiving more annual rainfall than the east and southeast. Climate change has caused a change in the pattern of the rainy seasons. According to a report by the Strategic Foresight Group (2006): 'At times, the total number of annual rainy days is reduced with short periods of more intense rainfall. Other times, frequent torrential rainfall on a daily basis exceeds the total monthly quantity.'

Increasing demand for horticultural products due to an increasing population provides opportunities for local production but also enables the development of added value products and services in areas such as processing, cold chain logistics and infrastructure (e.g. cold stores, packaging).

Rwanda's Vision 2020 identifies six pillars that will contribute to the desired ultimate goal laid out in the national strategy. Productive and Market Oriented Agriculture is one of the six pillars. As a instrumental part of the strategy moving forward, the Government of Rwanda is very active in different sectors looking to stimulate market growth, agribusiness development and increased productivity.

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## 1.2 Objective

The objectives of this study are:

- To provide an overview of the horticultural and floricultural value chains in Rwanda (actors and stakeholders, organisational structure and governance, bottlenecks, risks, and opportunities in terms of trade and local development)
- To provide stakeholders throughout the entire value chain, with practical information on the growth and trade potential of Rwandese horticulture and floriculture. These insights can be used to design a road map on how to proceed with the further development of the sub-sector sectors in Rwanda, in the context of local, regional and international markets.

The study was commissioned and financed by the Netherlands Enterprise Agency (RVO). The report could be used as an input by the Dutch Embassy in Rwanda for the design of the 2016-2020 food security programme, as well as to identify possible government-supported programme aiming at the promoting exports from Rwanda to the European Union (EU).

The study follows a Value Chain (VC) approach. For the purposes of this study the horticulture sector is considered to be the subsectors fresh fruits, vegetables and floriculture (cut flowers).

## 1.3 Reading guide

In Chapter 2 the method used to conduct the value chain analysis are explained. This is followed in Chapter 3 by a short overview of the investment climate in Rwanda. Chapter 4 discusses the domestic and regional markets in more detail and Chapter 5 concerns the export markets. Finally, Chapter 6 presents the conclusions, including a roadmap for stakeholders in the sector to foster development and generate growth in the sector.

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## 2 Method

### 2.1 Desk-study

The first task of the desk-study was to consider the inventory of recent studies on horticulture in Rwanda. The key studies are listed in Box 1. The key lessons learned and recommendations from these earlier studies provide the foundation for the further development of this VCA.

During the desk-based research, relevant secondary data about the horticulture and floriculture sectors were gathered and analysed. Also various data sources were consulted. However, data for Rwanda seem to be fragmented and are not always up to date.

#### Box 1: Selected key studies on horticulture and floriculture in Rwanda

- Baseline report on the Rwanda Horticulture Organization Survey (RHOS), funded by the EU and implemented by the AGRER Consortium, written by Clay and Turatsinze (2014)
- Cross border trade study by Trade Mark East Africa written by Kline *et al.* (2013)
- Smart horticulture tomato value chain by BoPinc, Wageningen UR and TNO written by van Dijk *et al.* (2015)
- Smart horticulture sector study by Wageningen UR and BoPinc written by Elings and van Dijk (2013)
- Floriculture study by Tierra BV, Wageningen UR and Sher Consultancy (2013) written by Kerkhoven *et al.* Requested by the Government of Rwanda, commissioned by the Embassy of the Kingdom of the Netherlands in Rwanda.
- Market access study by International Economics written by Bijl and Baker (2015) and funded by the EU.

*A complete list with consulted literature can be found in the References and websites*

### 2.2 Field work and strategic workshop

The second phase of the analysis consists of field work both in the Netherlands and Rwanda.

In the Netherlands various horticulture and floriculture value chain stakeholders with knowledge and experience in Rwanda were interviewed (e.g. inputs suppliers, knowledge suppliers, logistic service providers and import companies). For an overview of these interviewed see Appendix 1.

In Rwanda, key stakeholders in the horticulture sector were interviewed during a fact finding mission held in late July 2015. Those interviewed included growers, exporters and associations in Rwanda, institutional stakeholders such as government agencies, sector associations and support organisations such as service providers, finance institutions, logistics companies and quality control businesses. A local consultant, Dominique Nkunda Savio, was contracted to assist with the organisation of the mission. As part of the fact-finding mission a 1-day strategic workshop for stakeholders in Rwanda was held. Key value chain actors, such as government agencies, sector associations, exporters and producers were invited. For a list of people interviewed and participants of the workshop, see Appendix 1.

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## 3 The business climate

Doing business in Rwanda is relatively easy. Rwanda is ranked 46th in the global World Bank 'Ease of Doing Business'<sup>1</sup> and 3rd among the Sub-Saharan African nations (2015). The GoR created a 'one-stop shop' for establishing a new business at the Rwanda Development Board (RDB). However, getting involved in agribusiness appears to be less easy since it often requires flat land and getting this type of land requires more efforts since there is a lot competition for land between farmers and investors (RHOS, 2014). In addition, most Rwandan business people are very committed to become successful in their endeavours.

The study by Kerkhoven *et al.* (2013) reviewed the possibilities for floriculture in Rwanda and provides a detailed description of the business climate in Rwanda. They indicate that the GoR encourages foreign investment through outreach and tax incentives. The difference in treatment between foreign and domestic companies is the initial capital requirement for official registration. Foreign investors can start a new business irrespective of the initial capital requirement. Sections 3.1 to 3.3 describe the business climate in Rwanda in more detail, providing a number of updates to the information provided by Kerkhoven *et al.* (2013).

### 3.1 Investment procedures

The new Investment Law (Law No. 06, 2015) shifted from a more generic approach to a more targeted group of both domestic and foreign investors. This will provide opportunities for the emerging sectors to grow. Various sectors are labelled as priority, including the export and the industrial manufacturing sector.

It is possible for foreigners to invest in Rwanda. Any possible investor must first be registered as an investor by obtaining an investment certificate issued by RDB. For an investor to be issued an investment certificate determined by the Board in order to qualify for the incentives provided for by the Investment Law, the investor fills out an appropriate form indicating his/her identity and any other necessary details. The applicant shall pay a non-refundable registration fee determined by the regulations of the head of the Board. The registration must be accompanied by a variety of documents (e.g. a certificate of the legal status, business plan, an environmental assessment, projected number of employees, a proof of payment of the registration fee and a licence granted by the involved sector).

### 3.2 Fiscal and non-fiscal investment incentives

A variety of fiscal incentives have been introduced by the GoR. Below we highlight some of the main incentives, for more information we refer to the New Investment Law (Law No. 06, 2015):

- Preferential corporate income tax rate of 0%. An international company which has its headquarters or regional office in Rwanda will be entitled to a preferential corporate income tax rate of 0%.
- Preferential corporate income tax rate of 15%.
- Corporate income tax holiday of up to seven years. A registered investor investing an equivalent of at least USD50,000,000 and contributing at least 30% of this investment in the form of equity in the specified sectors will be entitled to a maximum of seven year corporate income tax holiday:

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<sup>1</sup> The annual World Banks Doing Business report analyses regulations that apply to an economy's businesses during their life cycle, including start-up and operations, trading across borders, paying taxes, and resolving insolvency. The aggregate ease of doing business rankings are based on the distance to frontier scores for 10 topics and cover 189 economies.

- 
- Energy projects producing at least 25 megawatts. This incentive exclude an investor having an engineering procurement contract executed on behalf of the GoR and fuel produced energy
  - Manufacturing
  - Tourism
  - Health
  - Information and Communication Technology (ICT) Sector with an investment involving manufacturing, assembly and service. This incentive excludes communication, ICT retail and wholesale trade as well as ICT repair companies or enterprises and telecommunications
  - Export related investment projects
  - An investor registered in another priority economic sector as may be determined by an Order of the Minister in charge of finance.
  - Corporate income tax holiday of up to five years. Microfinance institutions approved by competent authorities will be entitled to a tax holiday of a period of five years from the time of their approval. However, this period may be renewed upon fulfilling conditions prescribed in the Order of the Minister in charge of finance.
  - Exemption of customs tax for products used in Export Processing Zones. A registered investor investing in products used in Export Processing Zones shall be exempted from customs taxes and duties according to the provisions of customs rules and regulations of the East African Community (EAC).
  - Exemption of Capital Gains Tax: A registered investor shall not pay capital gains tax.
  - Value Added Tax refund. The refund of the Value Added Tax paid by investors shall be made within a period not exceeding 15 days upon receipt of the relevant documents by the tax administration authority.
  - Accelerated depreciation. A registered investor shall be entitled to a flat accelerated depreciation rate of 50% for the first year for new or used assets if he/she meets the following criteria:
    - Invest in business assets worth at least USD50,000 each
    - Operate in at least one of the sectors below and meet the requirements:
      - export projects
      - manufacturing
      - telecommunications
      - agroprocessing
      - education
      - health.
    - Transport excluding passenger vehicles with less than 9 people seating capacity
    - Tourism investments worth at least one USD1,800,000
    - Construction projects worth at least USD1,800,000
    - Any other sectors provided the investment is worth at least USD100,000
    - Any other priority sector as may be determined by an Order of the Minister in charge of finance.
  - Immigration incentives. A registered investor who invests an equivalent of at least USD250,000 may recruit three foreign employees without necessarily demonstrating that their skills are lacking or insufficient on the labour market in Rwanda.

In addition to the abovementioned fiscal incentives, there are also various non fiscal investment incentives in place. The RDB plays an important role in this and is facilitating promoting (foreign) investments. Its main duties described in the New Investment Law (Law No. 06, 2015) are as follows:

- Facilitate investors in:
  - Acquiring visas and work permits
  - Water and electricity connections
  - Being granted a licence by the business sector in which the investors intends to operate
  - Getting an environmental impact assessment certificate
  - Any other appropriate investment-related support that may be required.
- Provide investment incentives
- Ensure day-to-day facilitation to an investor in the implementation of the project
- Ensure daily monitoring of registered investors operations
- Keep all records related to investment certificates, work permits, visas and any other documents pertaining to the registered investment enterprise; carry out monitoring of investment projects in

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order to ensure that investment incentives are directed to the projects which adhere to the requirements and the investors submitted business plan

- Facilitate friendly settlement of disputes that may arise between an investor and one or more public organs
- Represent the GoR in negotiating investment agreements
- Not to disclose confidential information provided by an investor.

### 3.3 Investment protection

The Government of Rwanda has put in place a number of legal measures to provide investors with protection of their investments:

- *Protection from expropriation*

The Constitution guarantees protection of property. At the same time Article 30 of the Investment Law 2006 stipulates that the Government is responsible for the protection of foreign investment (Kerkhoven *et al.*, 2013). Expropriation of property may be carried out by the Government in the public interest defined as development, social welfare, territorial integration and security. However, there should be prior and just compensation that is calculated as being equal to the value of the land and the activities performed thereon by the expropriated person, calculated in consideration of market prices. Offences against property are punishable in accordance with the provisions of the penal code.

- *Cancellation of investment certificate*

The investment law, Chapter VII, (Law No. 06, 2015) indicates that in instances of fraudulent representation or the provision of false or incorrect decelerations, the investment certificate may be cancelled by RDB. The RDB will give a written notice to the investor requiring him or her to show cause within 10 days from the date of the notice why the certificate should not be revoked. If within that period a satisfactory explanation is not provided, RDB may withdraw the certificate. The entity affected may, however, continue to operate as a business in Rwanda while the legal process takes its due course or even after the certificate is revoked but then without the associated incentives. In practice RDB has never revoked certificates. It normally relies on counselling to achieve the desired corrective action.

- *Exchanging and remitting funds*

The National Bank of Rwanda (NBR) governs matters relating to the management of foreign exchange. Financial transfers to service debt payments, dividends, royalties and profits are unrestricted. However, they are subject to a 15% withholding tax. There are some restrictions on the transfer of earnings by expatriate employees, subject to meeting fiscal obligations. There are also reporting and repatriation requirements for exporters with transactions exceeding USD10,000. Both residents and non-residents may open foreign currency accounts with domestic banks. Only authorised dealers are allowed to engage in the foreign exchange business, except where the National Bank of Rwanda (NBR) permits a specific person or class of persons to do so, subject to the conditions it may impose (Kerkhoven *et al.*, 2013).

- *Dispute settlement*

Rwanda's framework for dispute resolution consists of commercial courts, and arbitration and mediation. Rwanda is a member of the International Centre for the Settlement of Investment Disputes (ICSID) since 1979, the World Bank's Multilateral Investment Guarantee Agency (MIGA), which offers insurance against non-commercial risk, and the African Trade Insurance Agency (ATI), which are supported by the World Bank and Lloyds of London. ATI covers risk against restrictions on import and export activity, inconvertibility, expropriation, war, and civil disturbances. Kerkhoven *et al.* (2013) explain that the commercial justice system covers commercial, financial, fiscal and other matters closely related to them, and consists of three commercial courts and a commercial high court. The three lower courts cover commercial disputes with a value less than USD37,000 while the high court covers disputes above this value as well as appeals against decisions from the lower courts. The Arbitration and Conciliation Law, 2009 covers informal dispute resolution.

Arbitral awards are treated as final and binding unless in certain specified exceptional circumstances. The law applies to both domestic and international commercial arbitration and

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conciliation with respective rules and procedures recognised as long as both parties agree to them. Moreover if during arbitral proceedings the parties settle the dispute, the arbitral tribunal shall terminate the proceedings thus encouraging peaceful agreement. The law also clarifies the case of bankruptcy, where a provision relating to arbitration specified in the contract relating to the bankrupt person, shall be enforceable by the trustee in bankruptcy. Kigali International Arbitration Centre (KIAC) was established by the Law no 51/2010 of 10/01/2010 as a supportive organisation for administered arbitration in Rwanda. The KIAC does not itself resolve disputes. It administers the resolution of disputes by arbitral tribunals in accordance with the rules of arbitration. The arbitral tribunal includes 1 or 3 arbitrators. One designated by KIAC and on request by respectively the claimant and respondent.

- *International investment treaties*

Rwanda is still developing its legal infrastructure. Specialised commercial courts began operations in 2008 and have largely cleared a substantial backlog of cases. Despite this, still concerns exist regarding a lack of independence and capacity in the judicial system as well as corruption in legal processes. Investors have commented in Kerkhoven *et al.* (2013) that the sanctity of contracts is not always upheld and court judgments are not always enforced in a timely fashion. For foreign investors, a Bilateral Investment Treaty (BIT) including a neutral arbitration clause may assuage these concerns. According to UNCTAD (2015), Rwanda has signed Bilateral Investment Treaties (BIT) with the following 8 countries: Belgium, Luxembourg, Germany, Mauritius, South Africa, South Korea, Switzerland and the United States. However, since there is no signed BIT with the Netherlands, Dutch investors have no alternative place for arbitration.

### 3.4 Plant breeders rights

Plant Variety protection is internationally regulated within the International Union for the Protection of New Varieties of Plants (UPOV) framework. UPOV is an intergovernmental organisation, based in Geneva, Switzerland. UPOV was established by the International Convention for the Protection of New Varieties of Plants mainly focusing on flowers. UPOV's mission is to provide and promote an effective system of plant variety protection, with the aim of encouraging the development of new varieties of plants, for the benefit of society. For a successful export-oriented flower production, it is important to have access to varieties and new varieties which are in demand in the international market. UPOV membership is a guarantee for plant breeders for safe international trade of their varieties. As a result, plant breeders will be hesitant to supply non-UPOV members with their new varieties of plants. To convince foreign investors and facilitate a successful export oriented flower production, the Rwandan membership of UPOV will be a prerequisite. However, Rwanda is not a member, but has signed a Memorandum of Understanding with the Government of the Netherlands in June 2015, in order to cooperate on the protection of plant varieties and the rights of breeders.

The importance of new varieties is underlined when considering that the commercial life span of a flower variety is only 5 to 7 years. Since flower production is more sensitive to fashion rather than agronomic characteristics, often only early bird producers of new varieties make premium money as exclusive producers. Availability of new varieties from internationally located breeders at local level demand swift local procedures and local protection of plant breeders' rights. Protecting plant varieties is a condition for suppliers to send the newest plant varieties to Rwanda.

However, Rwanda is a member of the African Region Intellectual Property Organization (ARIPO). ARIPO published a draft protocol for the protection of plant breeder rights. In the future, this might enable plant breeders to bring the latest variety to the country.

# 4 Domestic and regional horticultural markets

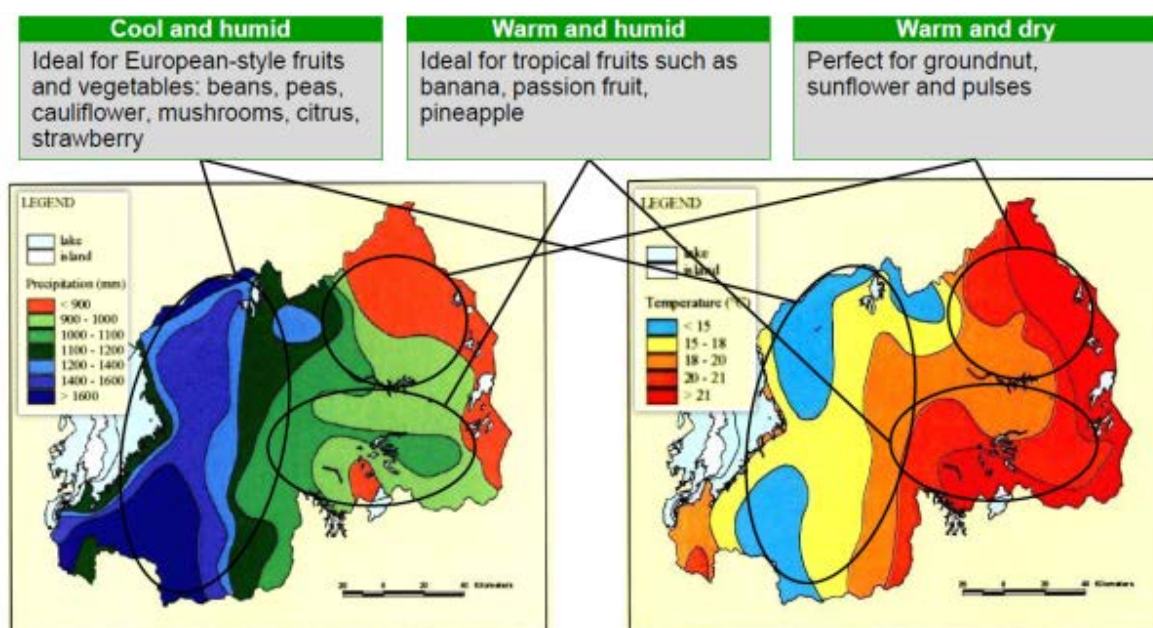
## 4.1 Horticulture in Rwanda

### 4.1.1 Production

Agriculture currently provides employment to up to 80 to 90% of the population. Farming with food crops for cash as well as own consumption is dominant, with average holdings of around 0.5ha (divided in different smaller plots). The Comprehensive Food Security and Vulnerability Analysis conducted in 2012 by the World Food Programme (WFP), in collaboration with the Rwanda National Institute of Statistics (RNIS), indicated that one in five Rwandan households had inadequate food consumption and could be considered as 'food insecure'. In addition, the prevalence of chronic malnutrition (stunting) among children under 5 remains very high (43%) and has been constant over the past 20 years (IFAD, 2014).

Rwanda has a fertile ecosystem, but food production is currently not sufficient to meet demand, meaning that Rwanda is also partly dependent on imports. A major constraint is the limited land available for cultivation. Rwanda comprises about 2.6m ha with a potentially cultivable area of around 1.4m ha (World Bank, 2015). The actually cultivated area is estimated at only 825,000ha, roughly one third of the total surface area of the country. The hillside slopes (about 660,000ha) are not exploited in the dry season and marshlands (about 165,000ha) are partially exploited in the rainy seasons depending on the degree of flooding. About 94,000ha of marshlands are currently exploited with the remaining area being large marshlands made up of peat or organic soils.

Rwanda has a mild tropical highland climate, suitable for horticulture production. With lower temperatures than are typical for equatorial countries because of its high elevation. Kigali, in the centre of the country, has a daily temperature range of between 12 and 27°C with little variation throughout the year. However there are temperature variations across the country; the mountainous in the west and north are cooler than the lower-lying east. Kerkhoven *et al.* (2013) present a detailed view of the different climatic zones suitable for the cultivation of various crops (Figure 1).



**Figure 1** Climatic zones of Rwanda

Source: Kerkhoven *et al.* (2013).



#### 4.1.2 Seasons and protected cultivation

The marshy valleys offer potential for irrigation and drainage. As previously mentioned, Rwanda has two rainy seasons - from mid-February to May and from mid-September to mid-December (Figure 2) and two dry seasons - from June to September and from December to February). The longer dry season (from June to September) is usually used for planting in marshlands. The rainfall and temperatures vary in different parts of the country. In general it is drier and warmer in the interior and East whereas there is heavier rain and there are lower average temperatures in the North and West.

Feb	March	April	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan
Long rainy season								Shorty rainy season			
Planting		Harvesting						Planting		Harvesting	
				Marshland season							
			Planting			Harvest					

**Figure 2** Planting schedule for tomato  
Source: Ntirushwamaboko (2013).

Plastic greenhouse and other forms of protected cultivation have recently been introduced and adopted by some richer farmers and cooperatives. As a result, high-value crops like tomatoes are now starting to be cultivated under protected conditions. Protected cultivation protects crops from external influences and can increase the production of various vegetable crops. The current level of protected cultivation (e.g. production in a greenhouse with plastic covers) is still limited and no official figures are known. Rwanda Horticulture Organization Survey (RHOS) indicates that there is almost 3ha of protected cultivation in Rwanda, although this study does not include nation-wide figures. Based on the sales volume of the leading greenhouse supplier, there appears to be more than 6ha. According to the RHOS survey, the main areas with protected cultivation are Kigali province and the South province. Only a small number of greenhouses are available on the market, including the type sold by the Kenyan input supplier Balton. Their older models are regarded as inferior due to a lack of ventilation. Balton is offering an attractive package at affordable costs of inputs. However, training service is not provided resulting in poor skills and not farmers not able to operate a greenhouse successfully. As a result many of the greenhouses have been abandoned. The Dutch 'Smart horticulture' project aims to overcome some of the hurdles for protected production by offering plastic greenhouses adopted to the local situation, training and working with proper inputs, and focusing as well as marketing.

## 4.2 Area for production and main crops

### 4.2.1 Fruits

The total area for fruit production is 45,500ha (Table 1). Main crops are avocado, pineapple and mango. They are often produced in the warm and humid central-south. According to the FAO figures, the yields of avocado and mangoes are below the regional average. However pineapple yield is 3.5 times higher. Appendix 2 gives a benchmark of the yield for Rwanda and its neighbouring countries.

Table 1

Area (ha), yield (tonnes/ha) and production (tonnes) of selected fruits

Crop		2010	2011	2012	2013
Avocados	Area	15,461	16,046	17,000	18,855
	Yield	8.39	8.93	8.53	7.89
	Production	129,732	143,281	145,000	148,823
Bananas	Area	41	31	32	32
	Yield	0.97	1.41	1.56	1.56
	Production	40	44	50	50
Lemons and limes	Area	1,498	1,555	1,600	2,070
	Yield	6.68	7.10	7.50	5.49
	Production	10,000	11,044	12,000	11,372
Mangoes, mangosteens, guavas	Area	5,121	5,315	5,315	6,466
	Yield	3.24	3.45	3.45	2.73
	Production	16,600	18,334	18,334	17,636
Oranges	Area	2,600	2,700	2,700	3,060
	Yield	1.92	2.05	2.07	2.04
	Production	5,000	5,522	5,600	6,228
Papayas	Area	242	251	260	270
	Yield	22.14	23.57	23.08	26.64
	Production	5,357	5,916	6,000	7,192
Pineapples	Area	1,933	2,006	2,100	2,222
	Yield	39.58	42.12	40.71	36.69
	Production	76,500	84,490	85,500	81,516
Fruit, fresh (nes) <sup>2</sup>	Area	10,496	10,740	11,200	11,200
	Yield	6.79	7.33	7.14	7.14
	Production	71,251	78,692	80,000	80,000
Fruit, tropical fresh (nes)	Area	1,265	1,294	1,294	1,365
	Yield	13.61	14.69	14.69	14.10
	Production	17,214	19,012	19,012	19,250
Total fruit excluding melons	Area	38,657	39,938	41,501	45,540
	Production	331,694	366,335	371,496	372,067

Source: FAOSTAT.

#### 4.2.2 Vegetables

For vegetable production FAO indicates 95,000ha, with a total production volume of 678,000 tonnes (Table 2). Main crops are pumpkin, squash and gourds, leeks, tomato and onions. Yields of various crops like tomatoes are far below the regions frontrunners. South Africa for example produces 4.5 times more tomatoes per ha than Rwanda does. Also Kenya produces 25% more tomatoes per hectare. Appendix 2 gives a benchmark of the yields for Rwanda and its neighbouring countries.

<sup>2</sup> not elsewhere specified.

Table 2

Area (ha), yield (tonnes/ha) and production (tonnes) of selected vegetables

Crop		2010	2011	2012	2013
Beans, green	Area	789	819	819	846
	Yield	6.10	7.28	7.28	7.27
	Production	4,813	5,959	5,959	6,149
Cabbages and other brassicas	Area	8,651	8,066	8,500	8,683
	Yield	15.39	14.55	14.12	14.70
	Production	133,120	117,355	120,000	127,634
Carrots and turnips	Area	1,706	1,514	1,600	1,458
	Yield	12.54	11.42	11.56	12.91
	Production	21,387	17,293	18,500	18,823
Chillies and peppers, green	Area	330	301	300	412
	Yield	12.30	16.28	16.67	13.14
	Production	4,060	4,900	5,000	5,413
Aubergines	Area	5,000	5,804	6,000	5,351
	Yield	12.00	12.34	12.50	13.70
	Production	60,000	71,606	75,000	73,323
Onions, dry	Area	1,793	1,800	1,900	2,068
	Yield	6.66	6.94	6.84	6.86
	Production	11,949	12,500	13,000	14,185
Pumpkins, squash and gourds	Area	45,334	45,217	46,000	46,500
	Yield	5.01	5.19	5.13	5.14
	Production	226,918	234,671	236,000	239,182
Tomatoes	Area	6,500	6,705	6,800	6,281
	Yield	20.77	15.29	16.91	19.63
	Production	135,000	102,501	115,000	123,300
Vegetables, fresh (nes)	Area	10,000	9,541	9,650	9,628
	Yield	5.81	7.07	6.84	7.06
	Production	58,096	67,448	66,000	67,975
Total vegetables & melons	Area	93,903	93,767	96,569	95,766
	Yield	7.00	6.79	6.81	7.08
	Production	657,643	636,733	657,159	678,480

Source: FAOSTAT.

### 4.2.3 Flowers

Current flower production in Rwanda is limited to small number of producers. They produce on small scale and serve mainly the domestic market. However volumes are small and varieties are often outdated. The study by the EU (RHOS, 2014) gives an indicative area of about 77ha of flower production. However it is not clear if pyrethrum is included in this figure, which is widely produced in Rwanda. At the moment there are some efforts to construct a flower park nearby Kigali (Kisari Flower Park) at an area of about 35ha. They are planning to cultivate roses for the export market. Also East African Growers are constructing greenhouses for roses to exports. This is discussed in more detail in Chapter 5.

### 4.2.4 Honey

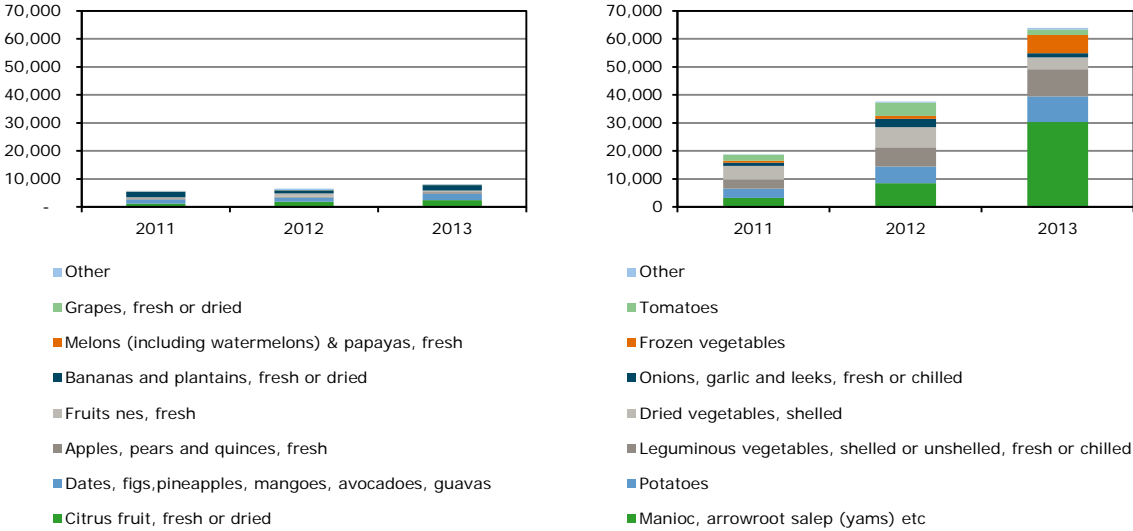
Beekeeping in Rwanda has been practiced for many years through successive generations and along inherited patterns. Beekeeping has basically been of a subsistence nature, where honey was used as a food product for home, medicine and for brewing traditional liquor. Nowadays beekeeping has become an important component with the growing export and local market. Rwanda produces mostly honey, beeswax and propolis. The beekeepers are organised cooperatives.

According to the National Agricultural Export Board (NAEB), Rwandan bee products have a good potential, mostly because of Rwanda's natural ecological factors. Rwanda has wild bees, that are resistant to diseases and the natural forests, with wild plant resources, provide a honey made of

special pesticide-free, vegetation and the vast amount of eucalyptus trees also produces a special and popular type of honey. The national and regional demand for honey is high and Rwandan honey producers have been challenged to increase the capacity. Also the export market is being developed with a recent agreement with buyers in Singapore. The agreements<sup>3</sup> has a value of USD3m and is aimed at upgrading honey producers' knowledge and providing them with modern equipment which is aimed at increasing productivity which will be supplied by the investor after buying it all to the international market (East African Business Week).

### 4.3 Import

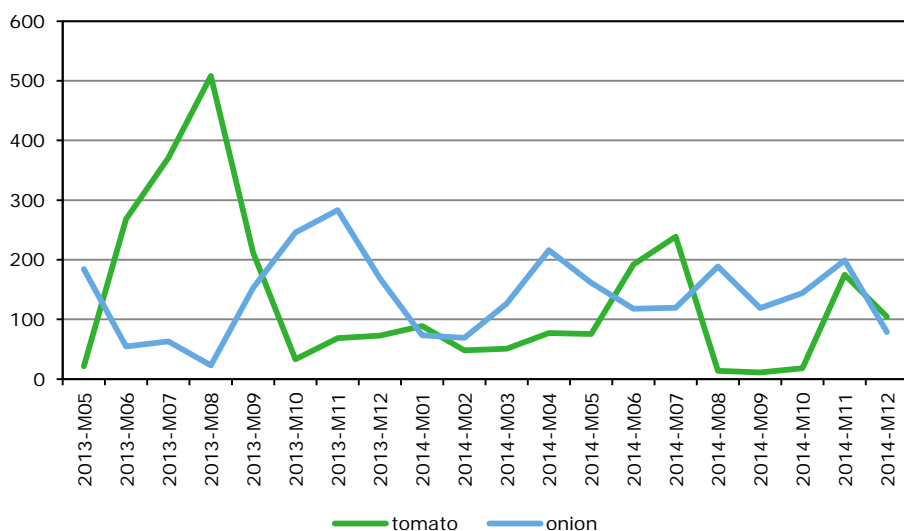
Import of fresh fruits and vegetables is significant. Rwanda imports annually about 8,000 tonnes of fruits and 64,000 tonnes of vegetables (Figure 3). Especially the annual imported volume of vegetables is high compared to the annual production and equals 8.1% of the annual vegetable production volume (excluding potatoes). The main imported fruits are citrus and mangoes from Uganda and Apples from South Africa. The most imported vegetable is yam from Uganda and Tanzania.



**Figure 3** Import of fruits and vegetables in tonnes 2011-2013  
 Source: UNCOMTRADE.

For some of the imported vegetable there is a pattern, which is correlated to the cultivation season in Rwanda (Figure 4). For tomatoes and onions we have obtained the monthly import data from UNCOMTRADE. During the long dry season in June and July the import of tomatoes increases and can go up 500 tonnes per month. It is difficult for traders in Rwanda to source sufficient volumes of tomatoes locally and therefore traders import additional volumes from Uganda. The peak of the onion import is difficult to predict but it appears to be high in the rainy seasons.

<sup>3</sup> <http://www.busiweek.com/index1.php?Ctp=2&pl=4009&plv=3&sr1=89&spl=525>



**Figure 4** Seasonality of tomato and onion import in tonnes per month  
Source: UNCOMTRADE.

## 4.4 Value chain map

The value chain map gives a detailed overview of all the different segments in the domestic horticulture sector and helps to understand the dynamics in the value chain (Figure 5). It starts with the production on the left side, and follows the produce all the way to the consumers on the domestic market on the right side. Dominant in the domestic and regional export market are the wholesale traders who connect farmers to the market. In the next paragraphs a description of the different segments, production, trade/ wholesale and retail, is provided. The main sources of information are the studies by van Dijk *et al.* (2015) and the RHOS study by Clay and Turatsinze (2014).

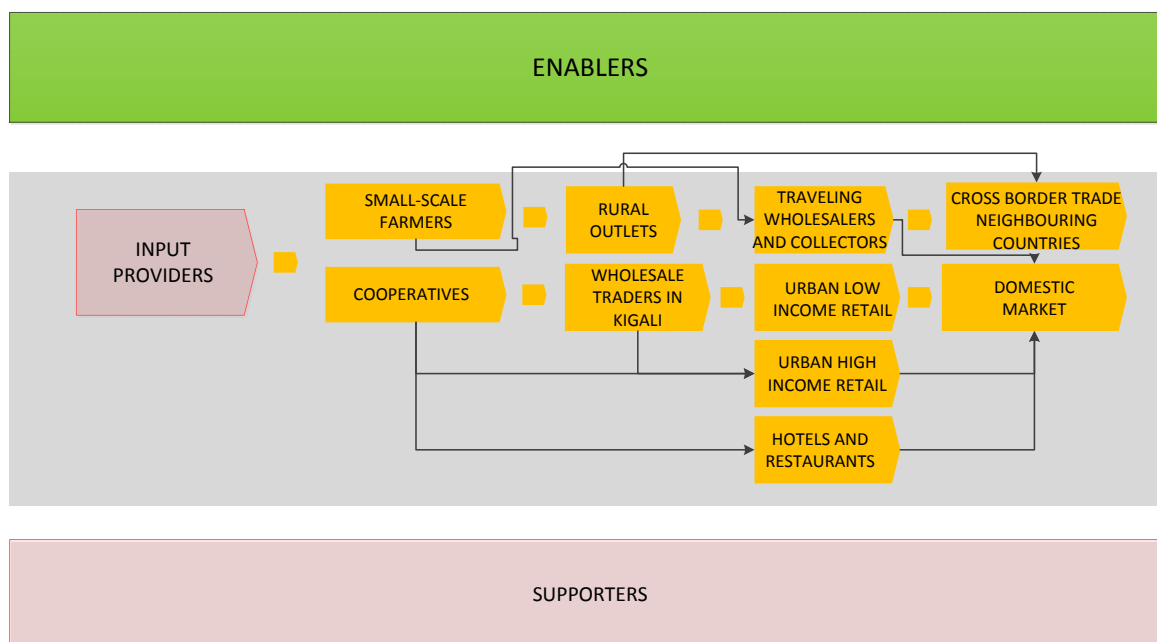
A typical harvest to market timeline for fresh vegetables is described in the study by van Dijk *et al.* (2015):

- Harvest on day 1;
- During the night the produce is stored under plastic cover or on the ground;
- In the early morning (04:00) sale to the traders at the farm or road side;
- Transport from the farm to the market in a large traditional basket (20kg) facilitated by the traders;
- Market sale from the basket or in other smaller packages to a buyer (restaurant, hotel, reseller, consumer).

Variations in this process do occur. Some traders for example buy vegetables at the rural markets instead of at the farm gate. Van Dijk *et al.* (2015) estimate that the average time from farmer to market is approximately 24 hours.

Figure 5 depicts the general value chain for both fruits and vegetables serving the domestic market and the regional market. Traveling wholesalers and collectors supply the regional market, and in lesser quantities, the domestic market. They get their produce from rural outlets or directly from small-scale farmers.

In contrast, the domestic market can be divided into urban low and high income retail segments. Wholesalers and traders based in Kigali supply these market segments and their produce is supplied by cooperatives, that in turn can supply high end segments or hotels and restaurants directly.



**Figure 5** Value chain of the domestic and regional horticulture market

Flowers are not traded along the same lines as those presented above. Flowers for the domestic market are traded directly between producers and buyers. Buyers in this case are hotels, restaurants and a small number of specialised flower shops. Some of the flowers currently cultivated on small plots are roses, agapanthus, carnations, alstroemeria and a variety of summer flowers. There is also some import of roses, mainly from Uganda and Kenya. The producers often organise transportation to the market by contracting drivers that deliver fresh flowers. Some buyers prefer to pick them up directly from the producer themselves. The flowers are hardly exported to regional markets. As a result, the following paragraphs refer to the key actors in the fruit and vegetable sector only.

## 4.5 Key actors and activities in the domestic market

### 4.5.1 Production: farmers and cooperatives

Farming in Rwanda is small-scale, with an average farm size of 0.5ha. On this land only a small area is dedicated to the cultivation of fruits and vegetables. The main crop is maize. Most farmers are organised in cooperatives throughout the country. According to the Rwanda Cooperative Agency (RCA) there are about 7,100 cooperatives focused on primary producers. It is not clear how many of these cooperatives are active in horticulture. Most cooperatives distribute subsidised fertilisers on behalf of the GoR, but do not provide support in activities such as marketing, sorting, storing and grading (van Dijk *et al.*, 2015) leading to limited bargaining power with traders. In addition individual farmers lack the time and know-how to trade directly on the wholesale market while those that can are unable to organise transportation.

Although a large part of GDP growth over the last ten years can be attributed to an improved performance in agriculture, the sector remains very fragile. Agricultural techniques are still based on rain-fed production systems, with less than 6% of the cultivated land currently irrigated, and agricultural production is still largely for subsistence (IFAD, 2014). In recent years the productivity has increased, but it is still below potential.

Recently a small number of innovative entrepreneurs have stepped into the agricultural sector. Most of them started producing mushrooms, eggs, cassava, fried potatoes and were mainly focused on the domestic market and sometimes also the regional export market. Some of them are interested in

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exploring opportunities in the production of vegetables for the upcoming regional middle class by making use of improved farming techniques such as greenhouses.

#### 4.5.2 Trade: wholesale and rural outlets

Wholesale traders play a dominant role in the value chain, bringing produce from the rural areas to the urban markets. As shown by van Dijk *et al.* (2015) traders purchase fresh tomatoes at the farm gate for between RWF150-200 per kg and sell them at the wholesale market for between RWF300-400 per kg. The costs for collection and transportation represent a large share of the price difference. After collecting they are often traded at the traditional spot markets in Kigali. The leading open fruit and vegetable markets in the capital are Kimisagara (Nyarugenge district), Kimironko (Gasabo district), Kicukiro (Kicukiro district). Some traders have direct links to modern retailers, hotels and restaurants.

Travelling wholesale buyers purchase fruit, vegetables and other products directly from farmers, both along the road or at rural markets. These markets are organised throughout the country in rural villages and take place a few times per week. The travelling traders know exactly where they can find the produce they need. At these local markets product requirements are relatively low. As long as growers can meet product expectations in terms of size and colour, as well as being able to supply sufficient volumes, the buyers are satisfied (RHOS, 2014).

Almost all fresh fruits and vegetables are sold on daily spot markets, where there are no facilities to cool and store tomatoes.). Travelling traders bring their goods here in the early morning, including imported produce. At the market, the fruits and vegetables (including some leftovers from the day before) are sold to retailers. The fruits and vegetables are traded on stands that have basic sun covers. Often the produce is lying unsorted and unpacked on plastic sheets. Along the corridors of the market, there are cupboards where the sales ladies store the produce they were not able to sell the day before. They simply pick up the plastic sheets on which the tomatoes are lying, and place them in the cupboards.

Vegetables are traded in large traditional braided baskets that contain large volumes of produce. After collecting the goods from the farmer or the urban market the baskets are squeezed in the back of a small pickup truck. The transport by pickup trucks are often causing serious damage to the produce. The fruit is often traded on the branch (e.g. bananas) and are sold as such. Other fruits like avocado or passion fruit is sold in crates.

#### 4.5.3 Retail: retailers, hotels and restaurants

Retailers in Rwanda are still small in number. Nakumatt is the main supermarket in Kigali and is part of the Nakumatt Holdings from Kenya. They have various shops in Kenya and the East African region. In Rwanda Nakumatt is considered to be very expensive and mainly serves the upper class. Nakumatt is one of the few stakeholders that works directly with the farmers. On average they deal with 5-6 farmers, but there is fluctuations during the year. The vegetables are sourced from different areas in Rwanda, as far as Gisenyi (in the North on the border with the DRC), if the price is more attractive. The farmer arranges transport to Kigali, and covers the transport costs and risks. Nakumatt also visits farmers from time to time for quality assurance and to select farmers that are given permission to supply. After delivery, the produce is sorted at the supermarket loading area, and then repacked by Nakumatt in durable plastic crates. Clients can pick the tomatoes themselves and pack in small paper bags. Some of the fruits and vegetables available in Rwanda fails to meet the quality standards at Nakumatt. As result they are forced to source from abroad. Nakumatt therefore sources from other African countries. This holds for hot peppers from Uganda or beans from Kenya.

Although there is an upcoming middle class in Kigali high-end market shops such as Nakumatt still focus on expatriates, setting their prices accordingly. As a result, more modern retail outlets aiming at the Rwandese middles are increasing in number and importance in Kigali. The small supermarket Frulep is one such example. This market segment appears to have higher quality standards compared to the traditional spot markets. They have 'quality' standards for suppliers and select farmers that are capable of delivering volumes at this quality level. It is likely that the Rwandan middle class will

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continue to grow and will be looking for convenient places to buy fresh fruit and vegetables at affordable prices. The importance of supermarkets as the leading market channel in sub-Saharan Africa is therefore emphasised by various researchers. It is estimated that supermarkets will be responsible for 1/3rd of the total sales of fresh fruit and vegetable by 2025.

The number of hotels in Kigali is increasing as is the number of restaurants. The budget hotels and budget restaurants often source their goods on the traditional spot markets. Other segments of the market with higher quality standards are the upscale hotels in Kigali such as the Serena Hotel, Hotel Des Milles Collines and Hotel Umubano, who all require high volumes of quality fruits and vegetables. Van Dijk *et al.* (2015) interviewed the buyer of Hotel Umubano and in the interview he mentioned that the hotel works with a single supplier of fruits and vegetables who receives a half year or a year contract. The hotel argues that the quality of the supplied produce is acceptable with rejections only occurring occasionally. The tomatoes are delivered daily by truck in plastic crates. At the hotel kitchen the tomatoes are stored in cooled conditions.

#### 4.5.4 Domestic market

The Rwandan population is projected to increase from 10.5m in 2012 to anywhere between 15.4 - 16.9m by 2032. A large share of this population is expected to live in urban areas. The urban population has increased from 19% in 2004 to 24% in 2014 and researches expect this urbanisation trend to continue into the future.

Consumers in Africa are shifting away from the traditional staple crops and cereals to a more healthy diet that includes fruits, vegetables, dairy and fish. This is likely to increase the demand for fresh fruits and vegetables. Currently, rural consumers mostly buy at the local markets or consume their own production. Urban consumers buy at the larger spot markets, or in small shops and stalls. These small shop owners also buy fruits and vegetables at the spot markets. Restaurant owners also buy their produce at these traditional spot markets like Kimisagara, Kimironko and Kicukiro.

For many producers that supply the domestic market, the certification schemes are difficult and expensive to obtain. In order to safeguard sustainable production, basic variants of for example GLOBALG.A.P. are being introduced in various African countries (e.g. Kenya-GAP). However in Rwanda there is no such initiative.

#### 4.5.5 Regional market

In addition to the local market some traders bring their produce to the DRC border to sell it to importers, who transport the produce over the border. A recent study by Trade Mark East Africa (Kline *et al.*, 2013) on these trade practices indicated that significant volumes of different fruits and vegetables are traded this way. Buyers at the border often unload larger volumes in to smaller packages that are transported to the other side of the border by individuals. On the other side of the border the produce is being recollected and sold at the local markets. Women often play a pivotal role in transporting commodities into the DRC, comprising 74% of informal cross-border traders (Trademark East Africa, 2012). Especially Goma, with 1m inhabitants and a large number of foreign-aid workers, is relying heavily on imports from Rwanda. In addition many new upscale restaurants and cafés have sprouted in the past year.

A product that is often traded via the informal trade route is tomato and this reflects the seasonality of the domestic production cycle. When local supplies are low and prices high, tomatoes enter Rwanda from Uganda and exports to Burundi and the DRC are reduced (June - July). Conversely, supplies are abundant immediately after harvest in December and early May, leading to low prices and minimal imports from Uganda.



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## 4.6 Enablers

### 4.6.1 Government of Rwanda

The GoR, through its various governmental bodies actively supports the development of the national horticultural sector. An important focus area is private sector investment promotion. The GoR welcomes foreign investment in policy and in practice for developing the domestic market.. The National Agricultural Export Board (NAEB), also an import governmental body, aims at developing agricultural exports but this is discussed in more detail in Chapter 5.

In its Vision 2020 plan, Rwanda set ambitious goals for its development and the reduction of food imports. Rwanda aims to achieve this vision by fostering investments in horticulture and floriculture. The Rwanda Development Board (RDB) is attracting foreign and local investors for these sectors. Also investment projects for the domestic market are being supported by the GoR and loans are made accessible for people willing to invest in agriculture. The Development Bank of Rwanda (BDF), an implementing agency from the GoR, has facilities to support investors in getting access to finance or is co-financing projects up to 50% in close cooperation with Rwandese banks. However, farmers and other VC stakeholders rarely apply for finance, since it is not common in the Rwandese agricultural sector.

The RDB is a one-stop shop for all investors. The RDB was set up by bringing together all government agencies involved under one roof. This included key agencies responsible for business registration, investment promotion, environmental clearances, privatisation and specialist agencies which support the priority sectors of ICT and tourism as well as SMEs and human capacity development in the private sector. The RDB is independent and influential and reports directly to the President and is guided by a Board that includes all the key Ministers (e.g., finance, commerce, infrastructure, agriculture). The vision of RDB is to transform Rwanda into a dynamic global hub for business, investment, and innovation. RDB is fast tracking economic development in Rwanda by enabling private sector growth. The scope includes all aspects related to the development of the private sector. This involves working with and addressing the needs of companies of all sizes (large, SMEs) and both local and foreign investors.

The development of marshlands and valleys is one of the strategies of the GoR in response to the pressure being placed on the fragile soils of the hillsides. Marshlands contain large water reserves, have lower erosion risks and a natural fertility which is beneficial for the cultivation of horticultural crops.

### 4.6.2 USAID

Through its 5-year project titled 'Rwanda Private Sector Driven Agricultural Growth (PSD-AG)', USAID intends to support the GoR to develop both the agribusiness sector and the private sector – including value chain development. USAID currently focuses on six horticultural value chains, of which 4 are for the domestic and regional market and the other 2 (avocado and sugar snaps) are only for the export market. These are:

- Tomatoes for processing, local and regional market
- Onions for local and domestic market
- Chillies for local, regional and international market.
- Sweet peppers.

### 4.6.3 Dutch Government (EKN)

The Dutch Embassy in Rwanda supports the agriculture ambition of the Rwandan government and is contributing to strengthening of the value chain by offering Dutch inputs and knowledge. Special focus of the embassy's agricultural office is to strengthen the value chain development and bring in Dutch expertise and agribusiness in those areas where the Netherlands has an added value and which are priorities of the national policies. The Dutch Embassy is seeking to improve the linkages among actors in, and overall performance of, a number of horticultural value chains.

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The Dutch Government also funds the FDOV 'Smart horticulture' project. This project is aiming to develop a basic plastic greenhouse that suits the hot weather conditions in Rwanda. The project is implemented by the Dutch Horticulture Trade Board (DHTB), and Rwanda Best Company (RBC) in close cooperation with the Dutch horticulture supply industry with support from supply companies Bosman, RijkZwaan, Hoogendoorn, knowledge institutes like Wageningen UR and TNO, and the BoP Innovation Centre. After construction of the greenhouse it will also serve as a demonstration and training centre. This greenhouse will be available on the market the last third and fourth quarter of 2015.

#### 4.6.4 Extension services

In 2004, the GOR decided to formally pursue a new extension strategy by decentralizing agricultural extension activities to the Ministry of Local Government (MINALOC), so these activities would be more focused on the specific needs of farm households within each district. The plan was fully implemented by 2009. As of 2011, there are 30 districts, 416 sectors, 2148 cells serving 14,876 villages across Rwanda. In each district, there is an 'agronomic' extension officer (i.e. advisor and administrator). Unfortunately, the limited budget available hampers the transport and the delivery of trainings, field demonstrations or marketing advice to farmers. In the horticulture sector, very limited training seems to be provided by the government of Rwanda (Swanson *et al.*, 2011).

Similarly, a number of NGOs are active in agriculture and they provide trainings especially around commodities such coffee, maize or beans. Horticulture is yet a new topic to be covered by NGOs.

## 4.7 Supporters

According to actors interviewed, there are limited seed varieties available. The domestic market demands these products in high quantities. Seemingly, the introduction of other tomato or carrot varieties has proven to be difficult since the Rwandese has developed a taste for specific varieties and crops. However, this does not mean that the introduction of new varieties and crops is unviable. The export sector, for example, is more experienced in supplying different varieties and crops according to the market needs. Below we discuss 2 agro input suppliers active in Rwanda that supply seeds, biological and chemical pesticides and basic greenhouses.

Agrotech is the leading input supplier in Rwanda with 11 franchise shops throughout the country. It sells mainly seeds and biological and chemical pesticides. Fertilisers are also sold in small quantities since many farmers are able to buy fertilisers for a subsidised price from the government. Agrotech is a dealer of Popvriend, an international seed company based in the Netherlands. Presented in metal tins, Agrotech sells mainly open pollinated varieties at affordable prices. The hybrid seeds market is still too small.

Balton offers fertilisers, agro-chemicals, seeds, farming machinery, greenhouses and systems for water management and irrigation. They also provide advisory services on cultivation and post-harvest solutions. Currently Balton is providing a basic greenhouse kit that is imported from Kenya. The kit has been bought by many farmers and families. However their older models are regarded as inferior due to a lack of ventilation. The GoR has supported farmers with the purchase of the greenhouse kit by providing an interest free loan.

Regular loans are difficult to obtain for farmers since they can offer only limited collateral resulting in high risks for the banks. In addition the interest rates are high, fluctuating around 20%. Interviewed stakeholders indicated that bank loans are hardly used in the sector, despite the efforts of the GoR to facilitate access to finance via BDR. However commercial farmers and other stakeholders turn to richer Rwandese as a sort of venture capitalist.

## 4.8 Logistics

The logistic process is described in detail in the study by van Dijk *et al.* (2015). They observed that in Rwanda there is a general lack of cold chain facilities. The transport from farmers to the rural market is by means of foot or bicycle. Packaging, of for example tomatoes, is in all sorts of baskets (plastic, organic material) and are often carried on the head or on the back of the bike. These baskets carry up to 20kg of tomatoes and provide little to no protection during transport.

From farm to the local market the fresh produce is transported in open or closed trucks, without any form of cooling. Small pick-up trucks are used with a capacity varying from 0.75 tonnes (small pick-up truck) to 3 tonnes (small truck), e.g. ISUZU ELF truck 2-tonnes.

The entire process between farm and consumers has numerous repacking moments when produce changes ownership. These activities are a cause for post-harvest losses and low quality of tomatoes at the end of the chain.

At the production location of the farmers and at the markets there are no cold storage facilities available. At the farm vegetables are often stored on the ground, and if needed covered. At the urban spot markets, the vegetables are also stored without cold storage facilities, the stock lifetime for tomatoes is around 1 to 3 days. However after 3 days the quality of the tomatoes has reduced significant. Supermarkets and hotels generally do store fruits and vegetables in cold storage facilities. Therefore the stock lifetime for tomatoes at the supermarkets and hotels can vary between 1 to 10 days.

## 4.9 Post-harvest losses

Based on the above it is obvious that the post-harvest losses in the Rwandan horticulture value chain are high. A recent study by WFLO (2014) gives an overview of the actual losses of various crops, including the number of vegetables in Rwanda as part of the Horticulture Innovation Lab (funded by USAID and implemented by UC Davis). The study indicates that there a significant amount of loss occurs at every step in the value chain. For tomatoes this is 7.8% at the farm level while at the retail level is estimated to be almost 15% (Table 3). As result the total post-harvest loss is estimated to be 33% before actual sales. In addition to this there is also the share that is sorted before the sales and consumed for personal use of used for feed. This share is often and sold at a lower price (estimated at one-third of market price).

Table 3

*Post-harvest losses in the Rwandese tomato value chain*

	N	Air temp.	Pulp temp.	Time from harvest (hrs)	% decay	% damage	Cumulative % of decay and damage	Actual % sorted out before sale
Farm	10	25.9	29.8		6.0	2.0	8.0	7.8
Wholesale	10	24.6	22.1	32.3	2.9	7.0	9.9	10.7
Retail	10	26.1	23.3	60.0	6.5	12.5	19.0	14.9
Total					15.4	21.5	36.9	33.2

Source: WFLO (2014).

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## 4.10 Structure and governance

Value chain governance refers to the relationships among all actors that operate within or influence the range of activities required to bring a product or service from inception to its end use. Governance is about power and the ability to exert control along the chain - at any point in the chain, some firm sets and/or enforces parameters under which others in the chain operate. The literature distinguishes different global value chain governance types (Gereffi *et al.*, 2005) that gives an indication on three variables that play a large role in determining how value chains are governed and change. These are: (1) the complexity of transactions, (2) the ability to codify transactions, and (3) the capabilities in the supply-base. The theory generates five types of global value chain governance – hierarchy, captive, relational, modular, and market – which range from high to low levels of explicit coordination and power asymmetry.

Based on this typology the domestic and regional market of fruit and vegetables in Rwanda is classified as a typical market governance structure due to important role of the spot market in which simple transactions are made. In addition there is no coordination from a buyer to with his supply base.

## 4.11 Major constraints and opportunities

Currently the major constraints for the domestic (and regional) market are;

- Cultivation of horticulture crops is done by smallholders on small plots. This creates inefficiencies in the current production system since they are not able to realise substantial yields due to a lack of quality inputs, they have no access to finance and they do not receive adequate training or extension.
- Poor organisation of farmers. Most cooperatives do not provide support in activities such as production techniques, marketing, sorting, storing and grading. They are solely administrative bodies that distribute subsidised fertilisers and struggle to stay afloat financially.
- Post-harvest practices are poor and cold store facilities are lacking throughout the entire chain. The exception is high end retail supermarket segment (cooling at arrival of the fresh produce in the store) and a small number of high end hotels and restaurants.

The deficiencies stated above contribute to food insecurity in Rwanda. Reportedly, one in five Rwandan households has inadequate food consumption and could be considered to be food insecure (WFP, 2012). In addition, the prevalence of chronic malnutrition among children under 5 remains high (43%) and has been constant over the past 20 years (IFAD, 2014). Making fruits and vegetables accessible as part of a healthy diet can offer great opportunities in the fight to reduce malnutrition (FAO, 2012).

In addition, it is expected that the demand for fresh fruits and vegetables is likely to increase in the near future due to population growth and increasing middle class. At the moment, it appears that current levels of production will not be able to meet the demand which is resulting in imports from neighbouring countries. This is especially true in certain periods of the year (e.g. dry season in June and July when there is limited local production). It is also likely that the middle class in Rwanda will continue to grow, further adding to the demand for convenient places to buy safe fresh fruit and vegetables at affordable prices year-round. This offers great opportunities for leading farmers or entrepreneurs to enter into the production and supply of fresh fruits and vegetables as a serious business, including opportunities to set up productive capital intensive farms with integrated supply chains linked to supermarkets or other demanding market segments.

Also, the regional market offers opportunities to explore. For example, some of the DRC's largest cities are located nearby the border and offer better price prospects. This is something worth further exploring.

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All in all, to be able to seize market opportunities and further improve the sector, the following key activities are advised:

- Support knowledge and skills development of leading farmers or entrepreneurs to increase productivity.
- Create awareness about the importance of post-harvest practices and improving post-harvest management practices and facilities throughout the entire value chain, including transportation.
- Increase the supply of affordable inputs
- Increase not only yields but also quality by introducing improved production techniques like greenhouses and making this available for though cooperatives for leading farmers or entrepreneurs.

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# 5 Export market

## 5.1 Introduction

Rwanda's National Export Strategy (NES) prioritises the growth of horticultural exports to international markets for the next years. The strategy to access high-end export markets includes horticultural products such as avocados, beans, chillies, herbs, pineapple, floriculture (roses and summer flowers) and processed products, among others.

Implemented in 2012, the NES consists of a five-year plan designed to *accelerate the progress already achieved and to shape the country's development in the future*. In the words of representatives from MINICOM, MINAGRIC and NAEB, promoting the horticultural sector, and in particular the horticultural export market, aims at:

- Providing small-scale farmers an opportunity to produce high value products on high demand by the market.
- Increasing farm productivity for maximum profit generation.
- Improving the nutritional status of households since part of the horticultural production will be consumed at the household.

However, in the NES document the Government of Rwanda identifies five issues that are hindering the growth of the export sector:

- Production quantities remain low. This includes limited land dedicated to horticulture production, lack of production skills and collection centres or post-harvest practices.
- Government institutes offer limited support to the horticulture (and floriculture) export sector. The perception from the Government is that organisations in Rwanda can help more effectively to drive export growth in terms of quality and volume.
- Organic production and certification represents an untapped opportunity for the export market. The downside is that certification is costly and complex for farmers to achieve.
- Financial institutions fail to see horticulture as an attractive venture. This issue is believed to mitigate as the sector grows.
- Farmers and other actors in the sector fall short of adding extra value to their products at any stage in the value chain.

## 5.2 Trade

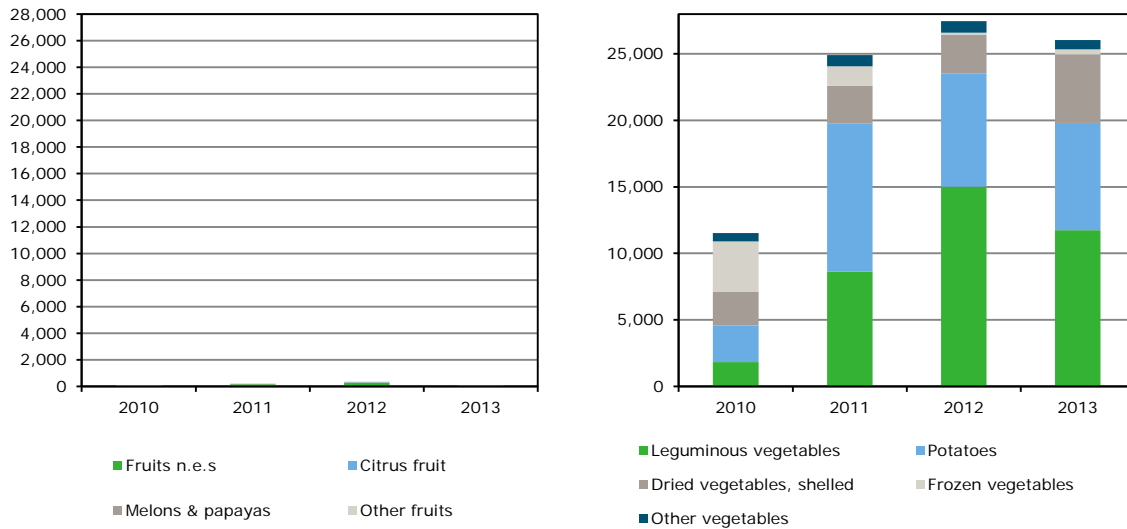
### 5.2.1 Trade schemes available

Rwanda has access to a wide variety of preferential trade schemes. Besides exporting under the general Most Favoured Nation (MFN) principle, which is the tariff regime offered to all members of the WTO, Rwanda can also export to the EU under the Everything but Arms (EBA) regime, which is yet more advantageous and only offered to least developed countries. Additionally, Rwanda is a member of the EAC Customs Union and Common Market, as well as the wider Common Market for Eastern and Southern Africa (COMESA). Furthermore, Rwanda can export duty and quota free to EU countries provided that the authenticity of the products from Rwanda is guaranteed.

Despite the many preferential trade schemes available, the Government of Rwanda has acknowledged that these channels remain underutilised for the most part.

## 5.2.2 Export

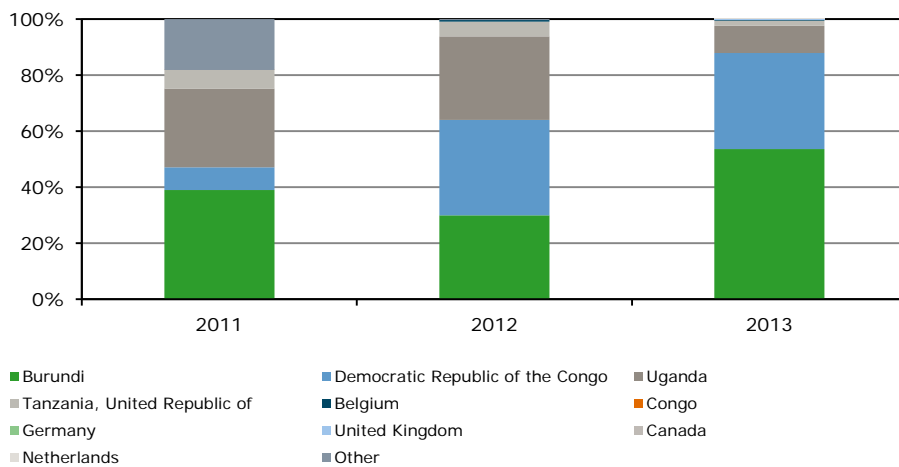
Although the formal and informal exported volumes of fruits and vegetables are limited (Figure 6) the GoR is investing in the development of the fruits and vegetables sector for export. Fruit export mainly relates to the export of avocado exported to Uganda and the DRC with an estimated value of USD32,000 (92 tonnes). To Europe there is no export of fruits. The formal export of vegetables is more significant and accounts for USD4.4m (26,000 tonnes, including potato). However, compared to major regional exporters, like Kenya, the volume remains small. Kenya exported in 2013 140,000 tonnes of fresh vegetables. The current export volumes of flowers are insignificant and therefore not discussed.



**Figure 6** Formal export of fruits and vegetables in tonnes

Source: UNCOMTRADE.

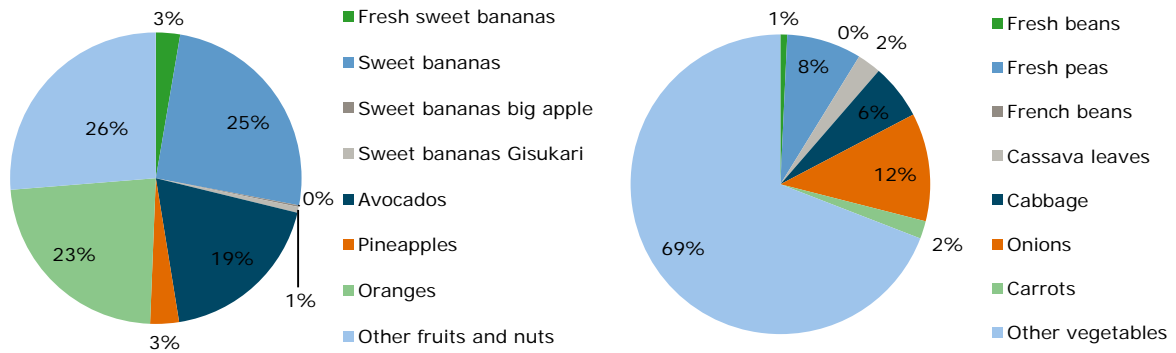
The main export destinations for vegetables are Burundi and the DRC and together they represent almost 90% of the total export value in 2013 (Figure 7). Some quantities are exported to destinations in the EU like Belgium. Currently this revolves around the trade vegetables such as hot pepper, okra and bitter gourd and some small amounts of peas (dried and fresh) for the diaspora market.



**Figure 7** Destination of exported vegetables

Source: UNCOMTRADE.

There is also a considerable amount of informal trade that is not registered in the UNCOMTRADE statistics. Estimations of the value of the informal trade are given by NAEB (Figure 8). The total volume of the informal trade in fruit accounted for USD500,000 (2,353 tonnes). The main products traded are sweet bananas and avocados. The total informal trade in vegetables is much larger at USD2.7m (7,350 tonnes) with onions, chillies and fresh peas being the main products traded. Also the group of other vegetables is relatively large and includes the trade of tomatoes. For both fruits and vegetables the main partners are Burundi and the DRC.



**Figure 8** Division of informal trade of fruits and vegetables 2013  
Source: NAEB.

### 5.3 Market channels for fruits, vegetables and cut flowers in Europe

About 60 to 90% of the fruit and vegetables sold in Europe is absorbed by large chain supermarkets. This figure is especially remarkable (90%) in countries such as Netherlands or Germany. Much of the fruits and vegetables sold are sourced from developing countries. In this case, the figure of the importer or wholesaler becomes instrumental since they bridge the gap between often unexperienced (small) exporters in developing countries and retailers in Europe. Only a few retailers maintain direct trading relationships with producers in developing countries.

The main channels for fruits and vegetables are supermarkets, specialised stores, the food service sector, discount supermarkets and street markets. Supermarkets and specialised stores (e.g. organic) are considered as the high-end market segment for fruits and vegetables. The Rwandese and other African communities living in EU use to purchase their goods in the lower market segments thus the name of diaspora market for those retailers. Organic products find their largest market in specialty organic shops and organic supermarkets.

As for the cut flower sector, there are two main market segments: the specialised and the unspecialised market segment. The former is characterised by flowers and plants being the dominant product of the florists, online shops, stalls and street markets. They are supplied by either traditional wholesalers or the so-called 'Flying Dutchmen', Dutch entrepreneurs who acquire flowers in the flower auction and sell them to the florists and other specialised shops. Cash-and-carry wholesalers can also supply to stalls and street markets. Most of the flowers sold on the specialised shops have gone through the flower auction. No voluntary certification is often required.

The second market for cut flowers is the unspecialised segment. This segment is dominated by supermarkets in which flowers are deemed as a secondary product in their assortment. The flower auction is only used for complementing the regular product assortment. In addition, supermarkets often request additional requirements with regards to social and/or sustainable issues.



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In Rwanda, current horticultural products for export rely largely on the diaspora markets where voluntary standards and non-legal requirements, being GLOBALG.A.P. the most commonly used, are often not met by exporters. This means that horticultural products cannot access supermarkets and other specialist stores. In this way, the export of some of the selected products featured in the NES, such as avocados or fresh chillies are only targeting low-middle range segments with fierce competition and margin and prices generally low. In addition, almost none of the products exported from Rwanda enters the organic or fair trade market segment.

Therefore, to access higher-end markets in Europe exporters should begin complying with non-legal requirements (food safety certificates and quality standards and voluntary standards).

### 5.3.1 Market requirements for fruits, vegetables and cut flowers

#### *Fruits and vegetables*

Imports of fruits and vegetables into the European market is not a simple matter. Before entering the EU market, all fresh produce goes through documentary, identity and physical checks at the Border Inspection Post. On a monthly base 1 or 2 shipments from Rwanda do not meet the legal requirements, this often due to the presence of harmful organisms or due the mistakes in the documentation<sup>4</sup>. The market requirements for fresh produce to enter into the European market are:

- Legal requirements (requirements that exporters must meet):
  - Exporters have to comply maximum residue level (MRLs) for pesticides in and on food products.
  - Fresh produce will be checked at the border inspection post: documentary, identity and physical checks are required.
  - Product traceability is not optional: European regulation (No. 178/2002) applies.
  - EU legislation sets general and specific marketing standards regarding quality and maturity. The product must be accompanied with a certificate of conformity that certifies compliance with the applicable standard.
  - Labelling: Cartons must mention the name and the address of the packer and the dispatchers, name of the produce, country of origin and class and size of the product.
  - Plant health: EU has set phytosanitary requirements to prevent introduction and spread of organisms harmful.
  - Contaminants: EU has several limits for several contaminants that need to be respected.
- Non-legal requirements (requirements to keep up with the market):
  - Food safety management system: some EU buyers require the implementation of a food safety management system. GLOBALG.A.P is deemed as an essential food safety certificate for exporting fruits and vegetables to the EU. Other additional food safety management systems such as BRC, IFS, FSSC22000 or SQF can be requested in addition to GLOBALG.A.P.
  - Quality standards: EU buyers often require compliance with a UNECE or FAO Codex Alimentarius standards. These standards refer to specific characteristics of the food and aims at meeting consumer's expectations.
- Niche markets: organic and fair trade

To export organic fruits and vegetables into the European Union exporters must comply with the rules and regulations established by Council Regulation (EC) No 834/2007 and Commission Regulation (EC) No 889/2008. Certain products can gain a foothold in this type of market; for example crops that cannot be produced in Europe or crops where demand is not met. Fair trade is a niche market where social and environmental conditions are as crucial as the product itself. Relevant standards are Rainforest Alliance or Fairtrade. According to the stakeholders interviewed there is no entity that provides audits for obtaining the organic certification.

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<sup>4</sup> [www.ec.europa.eu](http://www.ec.europa.eu)

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### Cut flowers

Buyer requirements can be divided into legal requirements, common or non-legal requirements and niche market requirements.

- Legal requirements:
  - Plant health: Cut flowers exported to EU must comply with the EU legislation on plant health.
  - Endangered Species – CITES: Exporters have to follow specific procedures when flower is listed as an endangered species.
  - Intellectual Property Rights: Exporters must know who owns the variety and pays royalties accordingly.
- Common or on-legal buyers requirements:
  - CSR: Corporate Social responsibility: Compliance with social or environmental standards are gaining attention mostly among EU unspecialised shops (general supermarkets) and is expected to be more important in the future. The most important certification schemes for flowers is MPS which covers environmental performances and is considered a must for growers. Furthermore they have several other schemes such as MPS-SQ (focusing on social issues), MPS-GAP (on Good Agricultural Practices) and MPS-Quality. GLOBALG.A.P. is also being required more and more by supermarkets.
- Niche markets:
  - Standards that are communicated through a consumer label: some examples are Fair Flowers Fair Plants (FFP), Fairtrade International and Rainforest Alliance.

### 5.3.2 Insights into the European Market by targeted product

Among NES's non-traditional sectors on which to build rapid export growth, Bijl and Baker (2015) identified fresh avocado, fresh (sliced) pineapple, chilli peppers and beans as the most interesting fruits and vegetables to export into the EU market. This selection considered the demand for the given product in Europe, potential margins, skills and infrastructure required from producers in Rwanda and also factored in other informal talks with development organisations and private firms in Europe.

The following boxes provide insights into the European market for each product highlighted above. Information has been retrieved from CBI's product factsheet webpage.

#### Box 2: Fresh avocado

##### Introduction

Imports of fresh avocados into the EU market have grown 30% in volume over the last years. The market size surpasses €1,000m. Interestingly, 85% of avocados imported into EU are produced in transit or developing economies. Peru, South Africa, Chile, Israel and Kenya supplied over 90% of the European market for fresh avocados in 2013. Netherlands, with a share of 33% of the market for imported fresh avocados, leads the list of top European importers. Reportedly, Rwanda produced 148,823 Mt in 2013 and there was no exports to the EU market.

##### Market competitiveness

**Buyer power:** it differs across European countries. In the North-western European market, large super-market chains are responsible for the majority of the avocado sold in the market. In contrast, Southern European consumers are inclined to purchase avocados through specialist shops and (open) markets.

**Competition:** Although the competition is fierce, current suppliers face limitations in increasing their supply. This has led to seasonal price fluctuations during the period from October to April. Often, prices increase by 50 to 100%.

**New suppliers:** meeting both legal and non-legal requirements is not an easy task. Nevertheless, countries like Dominican Republic or Brazil start to gain market share in the European Market.

##### Market characteristics sought

EU buyers and consumers have a growing preference for Hass type avocado that is intact, clean, pest free, has a stalk no longer than 10 mm in length and is in a condition to withstand transport and handling. The ideal market sizes are 14-15-16 cms. GLOBALG.A.P. is a must. For more product specifications or further buyer requirements, see CBI's *Product Factsheet: Fresh avocados in the European Market*.

##### Opportunities for Rwanda to export Hass type avocados

The scarce of supply during the period from October to April offers an opportunity for Rwanda to start serving the EU market. Also, the supply of avocados coming from Kenya is known as inconsistent and too

small in size. Thus, Rwanda can also make a difference by becoming a reliable partner in terms of product quality and quantity. However for export oriented production the Hash variety is required and this is not commonly produced in Rwanda (Bijl and Baker, 2015). Export to South Africa is a possibility (by truck) and export via Dar Es Salem to the Middle East or European market are possibilities worthy of exploration.

In the long-term, sea-freight seems to be the best option to deliver increased volume at competitive prices (as compared to other producing countries such as Peru or South Africa).

### Box 3: Fresh pineapple

#### Introduction

Imports of fresh pineapples into the EU market appears to be stabilised at 900,000 tonnes in recent years. The main imported variety is MD2 followed by Victoria, Sugarloaf and Smooth cayenne varieties. Eighty-five percent of the supply comes from Costa Rica (mainly MD2), followed at a distance by Panama, Ghana and Ivory Coast. The major importing countries in Europe are the Netherlands and Belgium, the UK and Italy. Fresh pineapples produced in Costa Rica are shipped by sea. In contrast, pineapples of varieties other than MD2 produced in Africa are air-transported. Reportedly, Rwanda produced more than 81,000 Mt in 2013, which were sold in the domestic market. The predominant variety is Smooth Cayenne.

#### Market competitiveness

**Buyer power:** Large supermarket chains dominate the market. They demand uniform quantity and relatively large volumes, as well as high quality, supply chain transparency and CSR. In southern European countries, on the other hand, specialised shops and markets are more dominant than large supermarket chains. This often causes that smaller volumes and less strict quality requirements are required.

**Competition:** Competition is fierce among current suppliers. In addition, meeting both legal and non-legal requirements is not an easy task.

#### Market characteristics sought

EU buyers require first and foremost fresh pineapple of the MD2 variety. GLOBALGAP is a must. Other varieties that are less demanded are cayenne and Sugar Loaf varieties which are good varieties for fresh-cut, although this market channel is subject to requirements such as HACCP, BRC and others. A preferred characteristic of imported pineapples is that they must be non-climacteric fruits harvested at the right time to maintain the commercial attractiveness of their colour.

#### Opportunities for Rwanda to export fresh pineapples

The most dominant variety in Rwanda, Smooth Cayenne, has a certain demand in Europe for the fresh-cut market segment due to its superior taste. However, EU buyers have a preference for trade with Western African countries thanks to the experience acquired over the years.

### Box 4: Hot pepper

#### Introduction

The import of fresh chillies to the European market set at around 85,600 tonnes in 2013. About 40% comes from developing countries such as Uganda, Senegal, Kenya and Ghana. In the European market, fresh Chilli peppers are mainly imported by a relatively small number of specialised importers of tropical and exotic fruit and vegetables. The main importers are located in the Netherlands and France and supply mostly large supermarket chains, specialised food stores and street markets and restaurants. In 2013, Rwanda produced 5,430 Mt in 2013 and mainly supplied the domestic and regional market. As of 2015, a couple of exporters have begun exporting between 2 and 5 tonnes of chillies per week.

#### Market competitiveness

**Buyer power:** In Europe, there are many suppliers that supply different market channels. Therefore, Supermarkets do not hold as much buying power as with other commodities.

**Competition:** entering the EU market requires suppliers to meet both legal and non-legal requirements and that becomes cumbersome for many suppliers from developing countries. Nevertheless, the seasonality in chilli production in developing countries, as well as the different market channels available, also offer opportunities for new suppliers.

#### Opportunities for Rwanda to export fresh chillies

Some African countries are regular exporters of fresh chili peppers (bird eye, Habaneros or Scotch Bonnet, among other varieties). However, many European importers have experienced hardship at some point when dealing with African exporters due to low quality or unreliable supply or product seasonality. This has caused certain reluctance among European buyers to do business with African countries. Nevertheless, the variety of market channels for (organic) chillies in Europe still offers opportunities for new suppliers.

## Box 5: Fresh beans

### Introduction

Imports of fresh beans from developing countries into the EU market appears to be stabilised at 200,000 tonnes in recent years. The main suppliers are Morocco (117,000 tonnes in 2013, mostly green beans), Kenya (35,000 tonnes, mostly green beans and sugar snaps) and Egypt (27,000 tonnes, green beans, peas). The list continues with Guatemala, Senegal and Zimbabwe. The import season goes from September to July. The most important importing countries are Belgium, Spain, France, United Kingdom and Germany. It is not clear how many tonnes Rwanda produces, although some point at 13 tonnes as an educated guess.

### Market competitiveness

**Buyer power:** The market is highly competitive and dominated by large supermarket chains. This is true for countries like Germany, the UK, the Netherlands, and Belgium. In France and Spain, smaller specialist shops and markets are frequent and present competition to large supermarket chains.

**Competition:** Entering the EU market requires suppliers to meet both legal and non-legal requirements and that becomes cumbersome for many suppliers from developing countries.

### Market characteristics sought

EU buyers demand intact, clean and free of anomalies and damages pods. GLOBALG.A.P. remains a must.

### Opportunities for Rwanda to export fresh pineapples

At the time of writing some exporters have started exporting beans to Europe. This indicates the opportunity that exist for Rwanda producers of start/continue exporting to Europe.

### 5.3.3 Cut flower production for export

At the moment there is no serious export of cut flowers from Rwanda, except for some trials shipments of summer flowers in 2014, facilitated by NAEB. The export possibilities for flowers is discussed by Kerkhoven *et al.* (2013). They argue that the growing conditions in Rwanda provide opportunities for the production of intermediate roses and summer flowers. However, Rwanda might have difficulties in competing with well-established producers like Kenya and Ethiopia both in terms of quality and cost. In addition the workforce in Rwanda is not skilled or trained to work in cut flower production.

## 5.4 Value chain map

For the exporters of fresh fruits and vegetables currently present and active in Rwanda, the concept of the value chain is very familiar. And the reason for this enhanced awareness, exporters say, is the need for good timing at each step of the 'process'. Ensuring that every activity along the chain occurs in a sound manner takes a great deal time and money. Box 6 provides an example on how an exporter evaluates the export opportunities.

In short, exporters work closely with a number of small-scale farmers who, in turn, will grow and harvest the crop according to the exporters' needs. For example, an interviewed exporter of hot peppers works with as many as 2,000 farmers on an ad hoc basis and based on mutual trust. This number shows that many exporters scale-up by adding farmers to their sourcing network. However working with a large number of farmers brings risks related to cash flow and supply chain coordination. On most occasions, exporters also own or lease a farm to help round up the production needed for the assortment of the week. On an overall basis, horticultural products are exported twice a week.

Later on, a handful of exporter's employees make sure the harvest and sorting of produce at the farms goes smoothly. Once harvested and sorted, produce is transported to the exporter's packhouse.

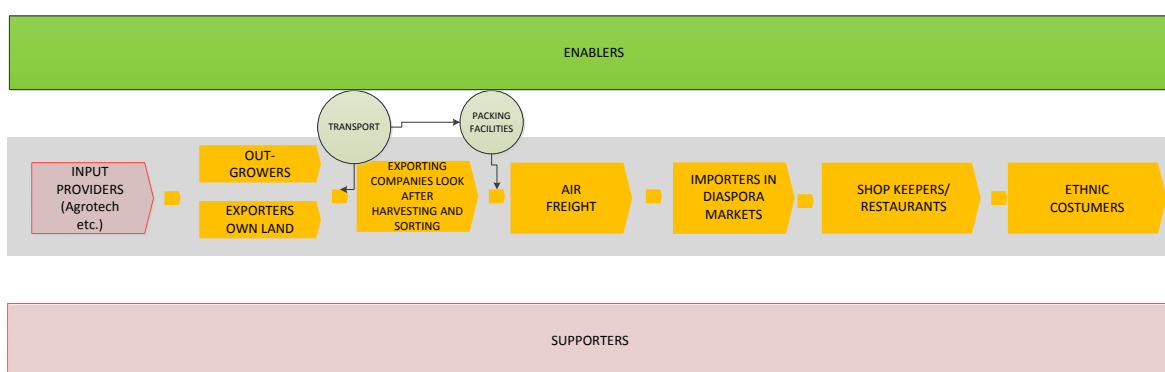
The produce is then washed, cleaned, graded and put into final packaging material. Good quality packing material for export is difficult to source. Currently NAEB provides packing material for the exporters. However this regarded as expensive (1 box costs RWF1,000 or EUR1.20).

### Box 6: 'Exporting feels sometimes like a solo flight'

For Donatille Nibagwire from Floris Rwanda, being an exporter means leading and coordinating the value chain efforts from production to final destination.

'Preparing a consignment for export is as thrilling as tiring. First, I have to make sure that produce is harvested and sorted at farm level. For that, I phone with my workers all day long. Second, I have to make sure produce reaches the packhouse and is properly handled and thirdly I'll have to ensure produce gets on the plane and is unloaded and received by importer in EU in good order. Within 24 hours, the process starts again'.

Figure 9 depicts the most important actors in the fresh fruit and vegetable value chain for export. Currently, Rwandese exporters are serving the low-end diaspora market in Europe. This market refers to the African and Indian people living abroad. There are many Africans and Indians living in the UK. For example the number of Indians living in the UK is estimated at 1.5m people. They prefer to consume typical vegetables like okra and specific types of hot pepper.



**Figure 9** Value chain of the export fresh fruits and vegetables

## 5.5 Key actors and activities

### 5.5.1 Production: farmers, out growers and exporters

#### *Farmers and out-growers*

Horticultural production in Rwanda remains small-scale. Large scale farming faces the issue of limited and suitable land available for horticultural production. The government is actively addressing this through different measures and programmes.

Farmers constitute the foundation of the export value chain. Overall, landholding ranges from 0.5 and 1.5ha. Each exporter has different contractual arrangements with farmers. One aspect that all the exporters have in common is the method of payment. According to exporters interviewed, payment to farmers occurs at the farm when sorting is finished and produce is transported to the packhouse. Farmers often require access to different inputs due to limited financial capacity. Exporters provide all the inputs needed to the farmers at a discounted price from final payment.

#### *Exporters*

Currently, the number of exporters in Rwanda is limited. Especially in the fruit and vegetable sector there are only 6-8 exporters including only one that is gearing up the export of flowers. Top exporters are believed to have a turnover of USD500,000 per year. The number of potential exporters is difficult to estimate, but it is unlikely to be a large number. In other sectors, like the processing there are more (potential) exporters. One foreign-owned export company is trying to gear up export from Rwanda by focusing on high-quality produce (e.g. beans, peas and sugar snaps). They have developed

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an out grower scheme but face serious problems in obtaining the right volumes. They grow now on 7ha to reach the estimated volume of 4ha due to a lack of inputs like chemical pesticides and fertilisers. As a result they have started complementary operations in Tanzania to compensate losses in Rwanda and to reach volumes.

One of the challenges emphasised by exporters is the difficulty of obtaining large volumes for export. Reportedly, exporters have a maximum capacity that do not exceed 3 to 5 tonnes of horticultural products a year. The second challenge is the limited access to financial schemes. In this regard, it must be mentioned the little awareness showed by exporters over the current financial instruments at their disposal. The third challenge is costly and less competitive inputs since they have to be imported via sea freight (and later trucked from Dar es Salaam to Rwanda) which adds to the final cost.

In addition, exporters face serious cash flow problems since payments by the importer takes place within two weeks after delivery and, in the meantime, exporters have to pay farmers and services provided by other actors straight away.

### 5.5.2 Trade: importers

#### *Importers dealing with diaspora markets*

Importers aiming at the diaspora market deal with a wide range of products in their assortment and have established very direct buying relationships with Rwandese exporters due to the limited volume of produce at hand. Overall, they are small-size importers that focus on street markets, discount supermarkets and small shops. Apart from legal requirements needed to enter the market, importers often do not require food safety certificates or compliance with a given quality standard. Importers rarely engage on close trading relationships with exporters since produce is assessed based on volume and not quality. All the Rwandese exporters supply the diaspora and less-specialised market.

#### *Importers dealing with supermarkets*

Large-sized importers bridge the gap between supermarkets and exporters in developing countries. They convey the standards required by supermarkets to exporters and sometimes they take on close partnerships with most qualified exporters so the volumes and reliability of supply for the supermarkets in Europe are guaranteed.

### 5.5.3 Retailers in the export market

#### *Small shops/discount supermarkets and street markets*

Retailers in this market segment have a preference for Rwandese products and purchase them on a regular basis. They also offer other horticultural produce from developing countries for their customers.

#### *Retail in the supermarket/specialised shop segment*

In the EU market, there is an increasing need for quality produce, but wholesalers and retailers are not willing to work with producers that are not certified. Especially out growers are considered to be a high risk since it is difficult to monitor the quality and safety of the product and have traceability systems in place. Wholesalers prefer to deal with large farmers, or at least very organised farmers, that are able to provide large volumes that comply with all the legal and non-legal requirements.

Therefore, exporting to the high-end market in EU requires serious investments and efforts to increase quality standards, increase the volume and comply with the legal and non-legal requirements. In addition, prices on the EU market for the most commonly traded goods are not providing a big premium compared to the domestic market. Considering the relatively high costs that exporters have to pay to export their goods, the margin is seriously under pressure. Other markets, such as the Regional or Middle East, present less regulations to comply with.

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#### 5.5.4 Enablers

##### *Government of Rwanda*

The Government of Rwanda, through its various governmental bodies (e.g. NAEB, RDB or Minicom) actively supports the development of the horticultural sector. An important focus area is private sector investment promotion. The GoR welcomes foreign investment for export, as discussed in Chapter 3.

In its Vision 2020 plan, Rwanda set ambitious goals for its development; to stimulate export and reduce the reliance on food imports. Rwanda aims to achieve this vision by fostering investments in horticulture and floriculture.

*The Rwanda Development Board (RDB)* has as mission to spur economic development by enabling private sector growth. In the horticulture arena, This means attracting investors to invest horticultural production, although the limited space available for large horticultural projects - at most 50 to 100ha represents a challenge.

*The National Agricultural Export Board (NAEB)* is the result of merging Rwanda Coffee Development Authority (OCIR CAFE), Rwanda Tea Development Authority (OCIR THE) and Rwanda Horticulture Development Authority (RHODA). NAEB's mission is to facilitate the growth of business to diversify agriculture and livestock commodity export revenues.

Currently, NAEB works on the development of both the horticulture and floriculture sector. For the latter sector, NAEB is facilitating the construction of the Gishari Flower Park. It extends for about 20ha at an altitude of 1,500 meters is in development. This park is a joint venture with a Indian flower exporter and the GoR. Due to unexpected circumstance within the flower company, the Indian company has withdrawn from the project and NAEB is looking for new investors. There are no other rose producing companies in Rwanda. NAEB has also designated other areas for large scale floriculture, including Muhango, Muko, Mutubu, and Kazanze.

In addition, NAEB supported a trial shipment of Agapanthus to the Netherlands in 2014. This shipment was well received, but establishing large volumes to deliver on a regular basis was troublesome. And the reasons lie on inappropriate packaging, poor handling at the airport and limited volumes available.

In regards to the horticulture sector, NAEB is providing to exporters high-quality card boxes produced and assembled in Kenya. This is because the packing industry in Rwanda is almost absent. As a consequence, exporters pay high prices which add to the already high costs of transportation and exportation.

Recently the NAEB has launched a Rwanda Horticulture Working Group (RHWG). It brings key stakeholders together from public and private sector, including donor institutions and NGOs, RDB, MoA, Trademark East Africa, the Dutch Embassy, the Private Sector Federation, USAID (representatives of the PSD project) and Grow Africa. In addition several exporters participate. The main objective of the RHWG is to provide an informal platform for dialogue between stakeholders, and to provide a channel for formal dialogue with the GoR on issues in the horticulture sector. The International Finance Corporation (IFC) has supported the launch of the RHWG while Grow Africa increased private sector participation.

*The Ministry of Trade and Industry (MINICOM)* facilitates 'Rwanda's economic transformation through enabling a competitive private sector integrated into regional and global markets, while ensuring a level playing field and the protection of consumers'. Together with RDB, they ensure the implementation of the National Export Strategy, paying special attention to the alignment of the national and foreign policies & strategies with trade agreements, development of market entry strategies.

##### *PSF*

The Private Sector Federation - Rwanda (PSF) is a professional organisation dedicated to promoting and representing the interests of the Rwandan business community in the whole of the Rwandan

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economy. Due its wide scope, PSF has recently begun to promote the development of the horticulture export sector by promoting trade support and similar activities. Yet, PSF does not necessarily target specific sectors for a specific markets.

#### *USAID*

Through its ambitious 5-year project titled 'Rwanda Private Sector Driven Agricultural Growth (PSD-AG)', USAID intends to support the government of Rwanda to develop both the agribusiness sector and the private sector – including value chain development. Until now the PSD-AG programme has been analysing the sectors and subsectors. They have just selected a number of sub sector in which they will implement the intervention. As a result they will focus on six horticultural value chains, of which 2 are for the export:

- Sugar snaps for export
- Avocados (hash type) for export.

With the support of the programme these chains will be strengthened and access to competitive markets will also be improved.

#### *Traidlinks*

Traidlinks is an Irish NGO with a base in Kampala and Kigali, set up to promote enterprise development focusing strongly on growth and improving the productive and overall corporate competitiveness of businesses.

It offers mentoring and skills exchange services to companies and bringing market linkages for business development primarily in regional markets in East Africa. Its services are provided to companies through financing and support from a range of stakeholders including Irish companies, management schools and individuals, and the Irish Government through Irish Aid. Currently they mainly work with agro processing companies and not with exporters of fresh produce.

The MarketLink export programme is being offered now to Rwandan companies, through sponsorship by Trademark East Africa. Mainly target agro-processing companies. The RDB contributes its time and resources fully under the Rwanda National Export Promotion Strategy.

#### *TradeMark East Africa*

TradeMark East Africa is a not-for-profit company that focuses on building long-term East African capacity. TradeMark East Africa is supported by various donors, including the Netherlands. TradeMark East Africa provides a platform for scaling-up of Aid For Trade to East Africa. In areas such as:

- Trade policy reform
- Trade-related infrastructure
- Regional investment climate harmonisation
- Export development
- Trade facilitation
- Coping with the social and environmental adjustment costs of deeper integration and rapid export-led growth
- The principles underlying TradeMark East Africa are to ensure that delivery is fast, flexible, responsive to partners' needs, with technically excellent inputs.

#### *Rwanda Netherlands Horti Platform*

This platform has been launched by MINAGRI, NAEB, the Dutch Horticultural Trade board and the RNE in March 2015. The platform aims in addressing key issues that jeopardise the development of the horticulture sector. Stakeholders from the Dutch private sector participate and they have the ability to discuss issues directly with the Rwandese Government in order to work jointly on improvements.

## 5.6 Supporters

There are a number of agro input suppliers active in Rwanda, as discussed in Chapter 4, the most important ones are Agrotech and Balton. The mainly serve the domestic market and are therefore



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focussed on the needs of the smallholder farmers. As a result it is difficult for export-oriented farmers to obtain the right inputs. An interviewed exporter argued that it is difficult to get the right pesticides for effective pest and disease control since they are not available in Rwanda.

In addition, for example importing materials from abroad is very expensive. Especially if this is shipped in from Dar es Salaam (Tanzania) and then trucked (20 hours) to Kigali. Only a few input suppliers sell to smallholders. Soil Cares recently started operations in Rwanda and now it is possible for farmers to test their soil and to fertilise accordingly.

Farmers producing for the export fail to receive support from governmental extension services. However they get agronomic support from the exporting companies. Often the exporter also provides seeds and pesticides.

## 5.7 Logistics

### *Handling services at the airport*

At Kigali International Airport (KIA), Magerwa Ltd. is the main company that handles the outgoing horticultural produce (90% of the produce). The amount of cargo varies weekly since exporters may export one or two times a week or once every two weeks. Magerwa is operating the facilities that were placed by NAEB and financed by the Dutch government, and argues that they have sufficient capacity to handle an increase export flow. In total the cold stores at the KIA have a capacity of 80 tonnes. The cold store is believed to operate at 40% capacity per week. However the cooling is not always switched on.

To help preserve the quality of the produce while it sits at the airport, four cold stores are available to cool down the produce at a service fee. This service fee is regarded as high by most exporters and therefore the cold stores are hardly used. The fee starts at RWF100 (about USD0.13) per kg but can be reduced to RWF28, if the exporter ships larger volumes on a regular basis. Most exporters have a shipment 2 to 4 times a week that is about 1 to 2 tonnes. There are daily flight connections to Europe.

### *Air freight*

Reportedly, air freight and handling costs are high compared to neighbouring countries. Current air freight costs are about USD2.15 per kg to Brussels. To Amsterdam with KLM, costs rise up to USD2.50 per kg. Prices for air freight are very volatile and therefore difficult to benchmark, but prices for freight from Nairobi (Kenya) to Amsterdam fall in the range of USD1.40 to USD1.60 per kg.

### *Cold chain facilities*

NAEB has recently installed 4 cold stores of 5 tonnes capacity each. They are located in the North (Musanze and Rulindo), the South (Kamonyi) and the east (Ngoma District). Only the cold store in Kamonyi is frequently used. Farmers don't feel the need to cool their produce since they harvest in the afternoon, store the produce for 1 night only at the farm, and the next day it is collected by traders in the early morning to be transported to the airport for export.

Among exporters, only 3 to 4 of them have cold stores installed in their packhouses. Unfortunately, often electricity problems or lack of technicians cause cold stores to be turned off for large stretches of time. A couple of interviewees showed no particular awareness on the importance of cold chains. Some others, on the other hand, expressed their interest in acquiring cold stores although they had no idea what company in Rwanda or elsewhere could provide the service.

To transport the produce from the farm to the airport via packhouse, exporters use non-refrigerated trucks since cooled trucks are absent in the sector. However NAEB has 5 independent trucks with cooling that can be hired for transporting fresh produce. They have a capacity of 5 tonnes each. Unfortunately, NAEB reported that trucks get hardly hired by entrepreneurs.

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### *Packing material*

A common complaint from exporters is the lack of local companies offering cheap and good quality carton boxes for export. This lack of a consolidated food packaging industry has forced actors to come up with alternatives to solve the problem. NAEB has partially addressed the problem by offering carton boxes produced and assembled in Kenya although the boxes are regarded as expensive (1 box costs RWF1,000 or EUR1.20).

## 5.8 Structure and governance

The horticulture and floriculture export chain highlights a shift from market-based value chain governance to more explicit coordination along the chain (Gereffi, 2005). In the past, and due to the limited volume of horticultural products exported, Rwandese exporters used to collect the week's assortment by engaging in some (informal) market relationships with different farmers and traders in the country. Over the last years, however, the governance of the export value chain has shifted and features a stronger coordination along the chain. The drivers for this shift have been:

- Markets in Europe have raised not only the legal requirements required to enter the EU but also fierce competition has caused quality standards and other non-legal requirements to become extremely important. This has led to enhanced coordination on the supplier side, going from purchasing better quality inputs, prepare harvest calendars, coordinate logistics and carry out quality control activities. In this regard, input suppliers have gained importance in the export value chain since they are the first stepping but good and healthy quality produce in the future.
- Rwanda prioritises the export of horticultural products to the European Union. This has caused many governmental bodies (such as NAEB and RBD) to set more professional standards along the chain and offer support to most skilled exporters. Other actors such as PSF and USAID are also committed to developing the sector by improving the skills and capabilities of producers and other actors in the chain.

All in all, while the horticulture export value chain seems to be more organised among actors, issues such as cold chain logistics and compliance with food safety and organic schemes are holding back the successful establishment of fruitful relationships between suppliers (exporters) with wholesalers that deal with higher-end market segments like supermarkets.

## 5.9 Major constraints and opportunities

### 5.9.1 Major constraints and opportunities for the fruits and vegetables

In the next section, we provide a list of constraints along the chain that are hampering the growth of the export sector. But before we get there, it is worth reflecting on the challenges identified in the NES document, Section 5.1, produced in 2012. Researchers acknowledge that all the challenges laid out continue to hinder the growth of the sector today. Nevertheless, major steps forward have been taken. In Chapter 3, we describe the conduciveness of the prevailing business environment; investment opportunities or incentives for investment as examples of measures aimed at easing the barriers to making business in the agricultural sector.

The following list of constraints is intended to provide the basis for an informed dialogue among relevant actors in the sector.

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- A. Production
    - Crop productivity and volumes remain very low. As importers in the Netherlands expressed, the Rwandese product is known as a good quality but scarce product. Increasing both farm productivity and acreage dedicated to horticultural production are instrumental for the growth of the sector.
  - B. Post-harvest practices
    - It is agreed among actors in the value chain that post-harvest practices need to be improved. In Chapter 4 we discussed the losses occurred after harvest. This figure sets at 35% and is largely unknown to producers and exporters.
  - C. Cold chain facilities and packing material
    - Cold chain facilities in Rwanda are scarce and underutilised. The few cold stores present in Rwanda face electricity cuts and lack of qualified technicians who can carry out the maintenance of the facility. Another issue related with cold chains is the little awareness on the importance of cold chains among exporters. ‘To me, the product quality decline with or without cold chains is almost similar. So I have no need for it.’ This was the comment of one exporter. Some other exporters, on the other hand, expressed their interest in acquiring cold stores. The trouble is that the lack of reliable service providers in Rwanda.
    - Some exporters reported difficulties in getting affordable packing materials, despite the appreciated efforts from NAEB to provide high packing material. The lack of a solid food packaging industry limited the options for market differentiation.
  - D. Export facilitation
    - Importers and wholesalers for the high-end markets in the EU have strict terms and conditions. At the moment, Rwandan exporters are not yet equipped to meet those requirements and neither are the organisations that are involved in the export value chain. For example, all Rwandese exporters have to provide a Phytosanitary certificate when entering the EU. While some exports are exempt from this requirement in EU the Rwandan authorities require the certification for all instances. Another example is the A form. European Union requires foreign authorities to process a custom declaration form which is not yet available in Rwanda. This causes exporters to pay taxes upon entering into the EU.
  - E. Access to certification
    - Exporters fail to comply with many of the key certifications that are highly advised for entering the high-end EU markets. These are mainly food safety schemes or sustainable production methods such as GLOBALG.A.P., organic certification and other voluntary standards if niche markets are to be targeted. Other markets, such as the Middle East, where there are less regulations to comply with, could provide an easier export market for Rwandese exporters.
  - F. Air freight: Reportedly, air freight and handling costs are high compared to neighbouring countries. Also, cargo space is said to be limited on these flights and arguably one of the reasons of high costs. Furthermore, landing fees are said to be significantly higher than in other airports in the region, which add to the costs of exporting.
  - G. Cash flow issues: No exporter skipped the topic of cash flows and how hard it is to pay farmers on the day of harvest while payment from European importer takes place within 15-30 days, if not longer.

The following opportunities stem from the analysis of the current export sector and conversations held with relevant actors.

- A. Production and post-harvest
  - a. Develop farmers’ skills to increase the volume of horticulture produce available for export.
  - b. Introduce higher quality standards so exporters can begin to establish more formal, or contract-based, trading relationships with importers. This can improve exporters’ cash flow and liquidity.
  - c. Help reduce the staggering figure of post-harvest losses. This includes raising the quality standards and introducing new packaging materials/designs for the trade of fresh produce.
  - d. Introduce alternative Post-harvest techniques.
- B. Cold chain development
  - a. Increase awareness on the importance of these facilities among exporters and other actors in the chain.

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- b. Identify reliable service providers and expertise on cold store maintenance in Rwanda or in the region.
  - c. Ensure reliability and regulated power supply.
  - C. Food packaging industry.
    - a. The absence of a solid packing industry offers opportunity for entrepreneurs to invest and innovate and especially given the fact that demand for fruits and vegetables will likely increase in the next years.
  - D. Accessing higher-end market channels in Europe
    - a. Being GLOBALG.A.P. and/or organic certified, as well as complying with voluntary standards, is instrumental to access to higher-end market channels with higher margins.
  - E. Drawing on a conducive business climate
    - a. The business climate in Rwanda is very conducive and bound to attract local or foreign investors in the medium term.

### 5.9.2 Major constraints and opportunities for flowers

The Rwandese flower sector faces several constrains. For the domestic market, flowers do not face a large demand and are perceived as expensive. As a result flower production is still very small-scale. However there are opportunities to further develop a professional delivery of the upscale hotels and restaurants.

There is demand for good quality flowers in the export market and especially for summer flowers., The GoR is highly supportive towards possible investors in this sector. This support can be seen in some of the flower parks that the Government of Rwanda is constructing

However for the export flower sector, there are also a number of larger constraints. The export of conventional cut flowers like roses will face high competition from other countries like Kenya and Ethiopia. Especially the cost for airfreight is higher in Rwanda. In addition, an efficient and well organised cold chain is missing and this is key for smooth export process. Also, the workforce in Rwanda is not skilled or trained to work in cut flower production. Another key constraint is the lack of adequate inputs like the appropriate biological and chemical pesticides. As mentioned by one of the exporting vegetable firms, it is difficult to find the right biological and chemical pesticides in Rwanda that match the requirements set by the EU and by GLOBALG.A.P. Also, the latest plant varieties are difficult to come by, since Rwanda is not a member of UPOV. However Rwanda has made progress in order to protect breeder rights.

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# 6 Conclusion

## 6.1 Conclusion

This study explores the development options for domestic, regional and export horticulture and floriculture value chains in Rwanda. The previous chapters examined in detail the structure and dynamics of these value chains. This chapter intends to address the second objective of the study: outline the main challenges and provide a roadmap for further development. In addition, it also highlights opportunities for Dutch private sector.

Rwanda is one of the fastest growing economies in Sub Sahara Africa. The GoR facilitates investments in many sectors, including horticulture. Rwanda ranks 46 in the global World Bank 'Ease of Doing Business' and 3rd among the Sub-Saharan African nations (2015), which makes doing business in Rwanda relatively easy compared to other economies in the region. Rwanda provides a good climate for cultivating fruits, vegetables and flowers. As result Rwanda offers great opportunities for a thriving horticulture sector that can contribute to Food and Nutrition Security but also has the potential to contribute to foreign currency earning by fostering the export.

## 6.2 Challenges

Current horticulture farming is predominantly smallholder oriented and is mainly rain fed, and consequently reaches low yields. The current area with protected cultivation is still limited and the adopted technology level is low (e.g. a basic greenhouse structures with basic plastic covers). Currently, Rwanda exports limited volumes of fruits, vegetables and flowers. In contrast, Rwanda still imports substantial volumes of fruits and vegetables in the off season, like tomatoes.

Despite the strong support of the GoR to develop the export oriented horticulture sector, only a few exporters of fresh fruits and vegetables are currently active in Rwanda. The export of vegetables to the diaspora market in the EU is the main market served. Exporters decided to tap into the diaspora market as opposed to other export market segments given the level of investment needed (e.g. no need for a complete cold chain) and market requirements (e.g. voluntary certification) are comparatively low.

Recently, a few exporters attempt to gain a foothold in the mainstream EU retail markets, with modest but promising results. However, they face serious challenges in order to meet the strict requirements of the conventional EU retail market. The main challenges are:

- Delivering substantial volume proves to be difficult. Although exporters tend to work closely with out growers to maximise production, these lack modern agronomic skills and thus volume provided fall short of what is needed,
- Earning voluntary certification such as GLOBALG.A.P. by farmers seems far-fetched. GLOBALG.A.P. is a minimum requirement to supply the mainstream EU retailers.
- Maintaining post-harvest facilities (and practices) according to industry standards is key to supply quality produce. Maintaining a constant cold chain is difficult for most exporters due to absence of cooled transportation and limited availability of cold stores in combination with frequent power break downs. Also sufficient volumes of card boxes for the export are not easily available and need to be imported from Kenya at high cost.
- Affording relatively high airfreight costs. Despite the availability of sufficient airfreight capacity on a daily base, the costs per kg are relatively expensive compared to neighbouring countries. Interviewed experts indicated that this might be related to the landing fee at Kigali International Airport paid by the airlines and the handling fees at the airport.

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- Managing and presenting the right certification. This relates to the phytosanitary certificate and the Form A process which is required to avoid taxes in the EU. The EU requires a phytosanitary certificate only for a number of selected produces, but the GoR requires a certificate for every product and the process of obtaining the document is not efficient (only possible during weekdays, and the exporter is required to provide a drive to collect the inspector and take him or her to company facilities for inspection). Form A is required with shipments to the EU to avoid taxation. Rwanda has approved the process, but is not able to provide the document yet. As a consequence, exporters can incur taxes on consignments exported.

Also the flower sector has been considered in this study and has been reviewed in the past in an extensive study (Kerkhoven *et al.*, 2013). The study indicates that growing flowers in Rwanda is appealing due to the favourable climatological circumstances and the demand of cut flowers and summer flowers on the EU market. However exporters of flowers from Rwanda will face serious competitive challenges compared to the well-established regional exporters of flowers. A few challenges mentioned:

- Direct competitors like Kenya and Ethiopia benefit from low air freight costs.
- Supply industry dedicated to the cut flower production is absent in Rwanda, as a result many inputs need to be imported from abroad which adds costs. This includes the latest chemical and biological pesticides, cardboard boxes and hardware.
- Also obtaining the latest varieties is difficult since Rwanda is not a member of UPOV.
- The workforce in Rwanda is not skilled or trained to work in cut flower production.

Currently the GoR is actively attracting foreign investors that are key to develop flower export from Rwanda. Once a number of flower exporters are established and a critical mass has been created, it also offers opportunities for input suppliers to actively develop the market and a broader assortment of inputs will become available for the exporters. This may reduce costs, increase the attractiveness of Rwanda as a cut flower production nation.

### 6.3 Road map: possible solutions and support actions

With the current constraints, it appears unlikely that the horticulture sector in Rwanda is able to produce sufficient volumes of fresh vegetables and fruits for the growing Rwandese urban population. Therefore, developing and modernising the domestic horticulture sector works towards both economic growth and an improved FNS status in Rwanda. The following key areas should be developed:

- Facilitate training of Good Agricultural Practices (GAP) among farmers,
- Increase awareness on the importance of post-harvest practices,
- Facilitate the investments on innovative post-harvest and cold chain solutions suitable for small scale cultivation.

In addition, we expect that the domestic demand for fresh fruit and vegetables in Rwanda increases in the near future, fostered by population growth and urbanisation. In addition, the growing Rwandan middle class continues to look for convenient places to buy fresh fruits and vegetables at affordable prices. Catering for this increasing demand requires that both small-scale and commercial farmers upgrade their production schemes and also offer opportunities for new or existing entrepreneurs to take up the challenge of producing fresh fruits and vegetables as a prosperous business. It also provides opportunities to set up productive, capital-intensive farms with more advanced and resource efficient technologies.

Crops like beans, peas, avocado and pineapple are in high demand on the EU market. Many of these crops are currently grown in Rwanda and thus the immediate opportunities to increase the export supply. However, exporting to the conventional EU market requires serious investments. GoR can support exporters by smoothening the export certification process, enabling exporters to profit from a lower air freight price, facilitating an adequate cooling infrastructures and supplying sufficient volumes of affordable cardboard boxes. Also, other enablers can contribute to develop the export sector by for example training out growers and exporters on agronomic skills, post-harvest handling practice and obtaining GLOBALG.A.P. certification. Also exposure to export markets by visiting trade shows and

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linking them to with foreign buyers can be beneficial in order to understand the market requirements. Finally, exporters themselves should invest in maintaining a closed cold chain and planting the right variety suitable for export.

## 6.4 Opportunities for the Dutch private sector

The Dutch sector can contribute to the development of Rwanda's horticulture sector. This can be done by supplying basic greenhouse structures and greenhouse technology, improved or hybrid seeds, irrigation, water pumps and water harvest solutions and other relevant inputs and expertise. However, due to the small market size it is recommended that the input suppliers supply the Rwandese market via their subsidiaries or agents in the other East African countries. Also Dutch fruits and vegetables traders can source various products from Rwanda, such as avocados, pineapples, beans and peas.

To develop the sector further, we recommend local stakeholders to adopt an integrated approach that harnesses the interest for developing the horticulture sector in and attracts Dutch investment and expertise. This integrated approach can be developed along the lines of a sector development programme. It is advised that the programme focuses on the sector's frontrunners, which often can be seen as commercial farmers which often have better skills and sometimes have access to credit. The programme is recommend to include a number of elements: capacity developing around GAPs, post-harvest practices, technology dissemination, market linkages and cold chain investments.

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- CBI: <http://www.cbi.eu>
- EU: <http://www.ec.europa.eu>



# Appendix 1 List of people interviewed and participants of the workshop

Organisation	Name	Comment
RNE	Teddie Muffels	
	Pieter Drost	
	Innocent Matabishi	Workshop only
African Vision	Michel Niyosnega	
BDF	Janet Kanyambo	
Lotec	Hassan	
Ugama	Callixte Twagirayezu	
RBS		
Agrotech	Giancarlo Davite	
FLORIS RWANDA	Donatille Nibagwire	
GREFEX	Wilhelmine Bora	
RBD	Modest	
Smart	Norbert van der Straaten	
Minicom	Patrick	
PSDAG / USAID	Tim Muzire	
	Melanie Bittle	Workshop only
Imbabazi	Graeme Loten	
Banque Populaire du Rwanda	Vianney Bizimana	
Rwanda Best	Jean Claude Ruzibiza	Workshop only
Trademark East Africa	Anataria Karimba	Workshop only
Sake Farm	Marie Laetitia Kayiteire	Workshop only
PSF / LIFAM	Livingstone Byamungu	Workshop only
NAEB	Epimaque Nsanzabaganwa	Workshop only
	Albert Nsanzimana	By local consultant after visit
	Hervé Ineza	Visit to airport
MINAGRI	Jean Marie Rusilibana	Workshop only
Tradelinks	Bernard O'Connell	Workshop and Skype
Proxifresh	Arnaud de Rambures	Email
Globallycool	Bastiaan Bijl	Skype
Frespack	Vianney Kabera	By local consultant after visit
DLV Plant	Wim van den Bos	Interview NL
OTC	Erwin Blokzijl	Interview NL
Hoogendoorn	Kevin Spoelder	Interview NL
LEI Wageningen UR	Prof dr Ruerd Ruben	Interview NL

## Appendix 2 Benchmark of yields of Rwanda and its neighbouring countries (tonnes per ha)

		Rwanda	Kenya	Ethiopia	Uganda	Tanzania	Regional average
Fruits	Avocados	8.5	17.1	-	-	-	9.5
	Mangoes, mangosteens, guavas	3.4	48.8	-	-	8.8	21.6
	Pineapples	40.7	33.5	-	8.9	3.3	13.8
Vegetables	Beans, green	7.3	9.6	4.1	n.a.	5.0	7.8
	Chillies and peppers, green	16.7	4.7	2.7	n.a.	28.0	2.9
	Tomatoes	16.9	20.9	7.7	5.8	8.5	10.1



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MEMORANDUM  
LEI 2015-161

LEI Wageningen UR is one of the world's leading independent socio-economic research institutes. LEI's unique data, models and knowledge offer clients insight and integrated advice on policy and decision-making in an innovative manner, and ultimately contribute to a more sustainable world. LEI is part of Wageningen UR (University and Research centre), forming the Social Sciences Group together with the Department of Social Sciences and Wageningen UR Centre for Development Innovation.

The mission of Wageningen UR (University & Research centre) is 'To explore the potential of nature to improve the quality of life'. Within Wageningen UR, nine specialised research institutes of the DLO Foundation have joined forces with Wageningen University to help answer the most important questions in the domain of healthy food and living environment. With approximately 30 locations, 6,000 members of staff and 9,000 students, Wageningen UR is one of the leading organisations in its domain worldwide. The integral approach to problems and the cooperation between the various disciplines are at the heart of the unique Wageningen Approach.

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