

Study Airfreight Kenya

**A study into the airfreight situation from Kenya to
the Netherlands with respect to Kenyan floriculture products**

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For

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CONTENTS

Contents	3
Foreword	4
1 Introduction	5
1.1 Background.....	5
1.2 Objectives.....	5
1.3 Methodology and approach	6
2 Findings	7
2.1 What are current and future developments with respect to freight capacity?	7
2.1.1 Global air freight trends	7
2.1.2 Freight capacity Kenya-Netherlands	9
2.1.3 High/low seasons.....	12
2.1.4 Future capacity.....	12
2.1.5 Volumetric weight and combining with other cargo	13
2.1.6 Traffic rights.....	13
2.1.7 Acquisitions by logistics specialists.....	17
2.2 What are developments with respect to new markets/destinations for Kenyan flowers?.....	17
2.3 What is the added value of flower logistics (from Kenya) on the broader Dutch economy?.....	19
2.3.1 Research on behalf of Dutch Ministry of Infrastructure and Water Management	19
2.3.2 VAT in case of re-exported flowers.....	20
2.4 What is the role of AMS airport and are there alternatives?.....	22
2.4.1 Schiphol inbound cargo volume.....	22
2.4.2 Slot availability at AMS.....	23
2.4.3 Schiphol versus other alternative airports.....	24
2.4.4 Sea freight and other alternative modalities.....	25
2.5 Other related topics mentioned during interviews.....	26
3 Conclusions and Recommendations	29
3.1 Conclusions.....	29
3.2 Recommendations	32
Annexes	35
A.1 Terms and Definitions.....	35
A.2 References.....	36

FOREWORD

The Netherlands has invested heavily in the fresh sectors in Kenya and is the leading destination of Kenyan flower exports. Over the past ten years, export volumes to the Netherlands have more than doubled and at Amsterdam Airport Schiphol (AMS) Kenyan flowers represent a vast share of inbound cargo from Africa. However, there are indications that airfreight conditions for Kenyan floriculture products being transported from Kenya to The Netherlands are not optimal.

Against this background, Dutch and Kenyan stakeholders have been requesting the Dutch Embassy for an update on the current status of freights, airfreight capacity and the economic impact of international flower logistics on the broader Dutch economy. The present study has been carried out – with the support of the Netherlands Enterprise Agency (RVO) – for the purpose of getting objective insight into these conditions. The study is based on desk research and interviews with relevant stakeholders from the chain. The study focuses on four specific topics:

- Current and future developments with respect to freight capacity;
- Ongoing and new developments regarding new markets/destinations for Kenyan flowers;
- The added value of flower logistics (from Kenya) to the broader Dutch economy;
- The role of AMS airport and the availability of alternatives.

The results of this study will provide the Dutch Embassy with the information necessary for taking effective action towards maintaining and improving trade flows from Kenya to The Netherlands.

Ingrid Korving

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September 2018

1 INTRODUCTION

1.1 Background

The Netherlands has invested heavily in the building of the fresh sectors in Kenya. The Netherlands is a hub, gateway to Europe and wants to remain the second largest agricultural exporter in the world. The Dutch economy depends heavily on foreign trade flows. However, there are indications that the airfreight situation from Kenya to the Netherlands with respect to Kenyan floriculture products is not optimal and developments towards the future and their impact are not always clear.

Dutch and Kenyan stakeholders have been requesting the Dutch Embassy for an update on the present situation of freights, the extent to which airfreight capacity is fully booked or not, the economic impact of international flower logistics on to broader Dutch economy etc. Information from different stakeholders tends to contradict and/or is often based on subjective information.

Therefore, a study was carried out to get an objective insight on the current and future airfreight situation, before taking action. This study, which was carried out with the support of RVO, will enable the Dutch Embassy in Nairobi to make necessary steps or to activate stakeholders to do so, maintaining the important trade flows from Kenya to the Netherlands. Underlying report is the result of this study.

1.2 Objectives

A report that provides the Embassy as well as the Kenyan and Dutch floriculture sector with reliable information on the current and future airfreight situation and possible action for improvement:

- Result 1: Objective information on trade and logistics between the Netherlands and Kenya and vice versa, but also to the Middle East, based on the analysis of trade (and logistics) statistical data.
- Result 2: Insights based on interviews with several stakeholders from the chain.
- Result 3: Recommendations (and quick wins) for further actions for the Embassy (agricultural counsellor) and partners from the sector.

Research questions:

- RQ1: What are current and future developments with respect to freight capacity?
- RQ2: What are developments with respect to new markets/destinations for Kenyan flowers?
- RQ3: What is the added value of flower logistics (from Kenya) on the broader Dutch economy?
- RQ4: What is the role of AMS airport and are there alternatives?

1.3 Methodology and approach

The main activities carried out for this study were:

1. Desk research:

- Collection and analysis of trade (and logistics) statistics.
- Quick scan of existing studies (collection and review).

2. Interviews (25+) with various relevant stakeholders in Kenya, the Netherlands and the Middle East, amongst which:

- Primary target group: forwarders in Kenya and the Netherlands, airlines and airports.
- Secondary target group: growers, importers, auction, other logistics service providers.
- Complementary: industry associations, government institutions, and other chain influencers and supporters.

Upon request of a number of interviewed parties, we have decided not to include a list of interviewees.

References in the text:

- Statements from interviewees are kept confidential and are not linked in the text to specific interviewed persons.
- In Annex A.2, you will find a list of studies, reports and other publications that are used. Reference by means of (*source year*).
- A list of Internet sources can also be found in Annex A.2 and can be recognised in the text by their superscript reference.^{W1}

2 FINDINGS

In the following sections, findings from desk research and interviews are discussed per research question.

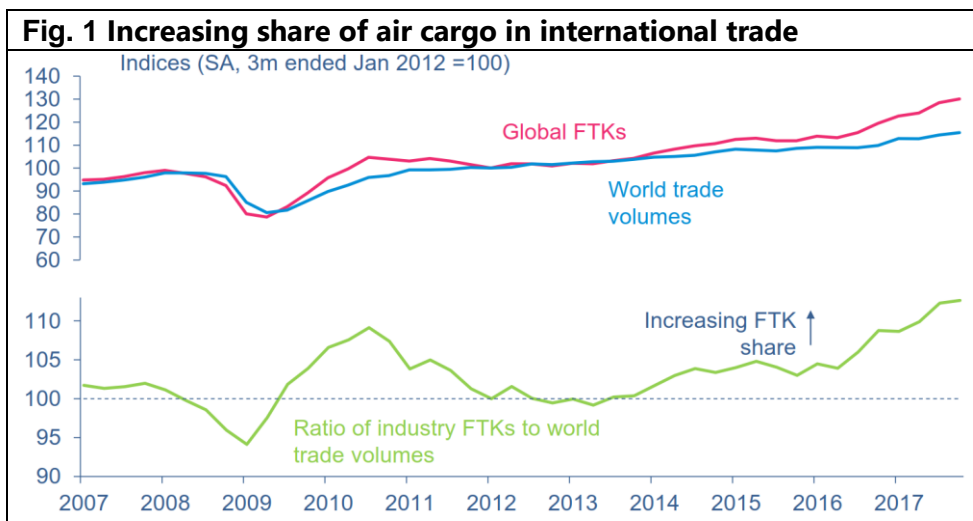
2.1 What are current and future developments with respect to freight capacity?

2.1.1 Global air freight trends

Rising demand for air cargo

According to a recent IATA studies (IATA 2017b) and the majority of interviewees, demand for air cargo is still strong and yields continue to rise. Air cargo is growing faster than other modes of transportation. This is consistent with the typical pattern seen during upturns in the economic cycle, although the growing importance of e-commerce may also be a factor at play. All major trade lanes are showing growth. (IATA 2017a, 2017b).

In fact, demand for cargo is now growing faster than capacity, leading to increased pressure on global cargo availability. IATA expects that improved economic and trade conditions, including sharp rises in consumer confidence, are to support further demand increase. (IATA 2017a, 2017b)

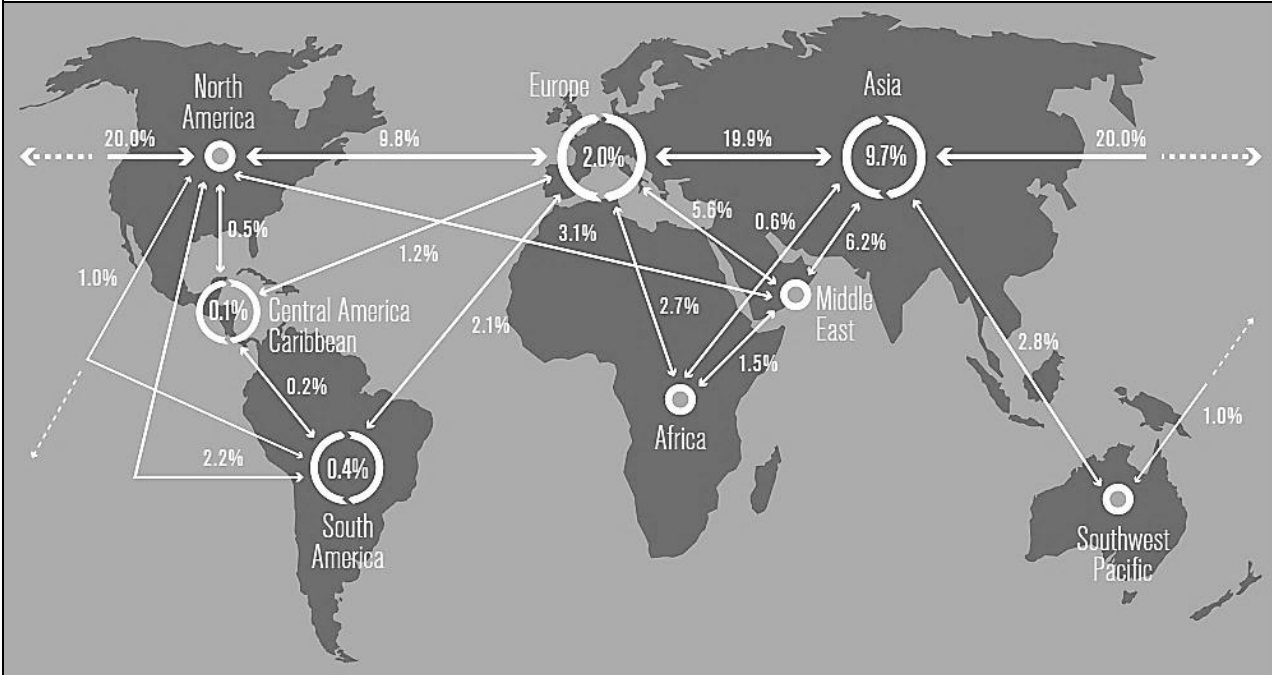


FTK = Freight Tonne Kilometre

SA = Seasonally Adjusted

Source: IATA (2017a)

Fig. 2 Share of different route in total traffic, 2017



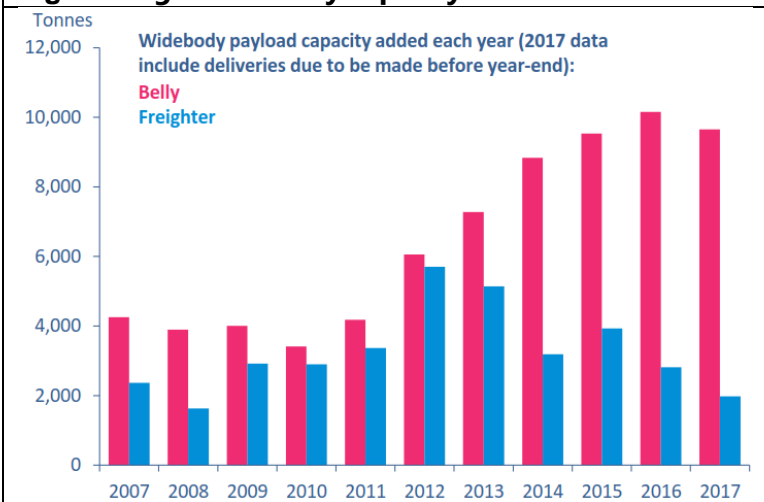
Note: Share as % of international scheduled Freight Tons-Kilometers.
Source: IATA (2018)

Shift from freighter towards belly (passenger aircraft)

Freighter operations have been under pressure worldwide. It is expected that the market share of freighters (as compared to belly in passenger aircrafts) will continue to decline worldwide. This is especially true for the older generation of freighters and to a lesser extent new generation freighters. Furthermore, only 5-10% of all goods actually require main deck capacity on freighters due to the physical nature of the goods. (interviews, Seabury 2015)

About 2 thousand tons of payload capacity were estimated to be added to the freighter fleet in 2017, which is the smallest increase since 2008. Additions from belly capacity (wide-body passenger fleet) have continued to dominate. (IATA 2017b)

Fig. 3 Freighter vs Belly capacity



Source: IATA (2017b)

Global airline cargo revenues

2017 air trade data indicated that global airline cargo revenues are on the road to recovery after a steady decline since its peak in 2014. The fall between 2014 and 2016 in airline cargo revenues was driven mainly by lower oil prices, with the drop in fuel costs reflected in lower surcharges – in turn lowering gross yields.^{W3}

The effects of such yield drops had different effects. Freighters operators saw their lost revenues partly recovered by lower fuel costs. Benefits of lower fuel costs are limited for belly carriers, while revenues have plummeted. For forwarders and ultimately shippers, the reduction in surcharges simply meant lower costs of doing business.^{W3}

Today's recovery of airline cargo revenues is driven mostly by increased demand.^{W3}

Interviewees mentioned that oil prices are rising and airlines are expected to add fuel surcharges again.

One of the strengths of the Dutch flower logistic system, is that importers/auctions pay airlines/forwarders from the auction proceedings. According to an interviewed expert, the guarantee of getting paid has been one of the driving forces of the current flower supply chain and helped to attract carriers to the industry and develop flower logistics. It for instance allowed investments by the forwarders in warehouses, etc.

2.1.2 Freight capacity Kenya-Netherlands

Until last year, freighters came naturally into the market. This has stopped as Far Eastern markets offer well-paid freight both ways. A few interviewees mentioned that there is a discrepancy between airline cargo revenue of high tech items and flowers ('flowers cannot compete against mobile phones').

Availability of southbound cargo into NBO represents a challenge for the carriers. For Nairobi, a lot of freighters come in with low payload. There is not always sufficient cargo to operate economically viable round trips. In the past, the oil industry in West Africa or car industry in South Africa created demand for south-bound cargo (luxury cars were flown into NBO on freighters that first drop off car parts in South Africa). For airlines the question seems to be: "Why would I send my aircraft into Kenya?". To cope with this, one carrier, for instance, is operating some flights southbound via Johannesburg, Addis Ababa and Khartoum to NBO before loading flowers northbound.

The second Kenyan airport Eldoret is used for imports only. It is not suitable for flower exports because outgoing flights operate with reduced payload due to the higher altitude of the airport and infrastructure that is not satisfactory. It is easier to export flowers via NBO (about 269 km distance) with well-established handling facilities and many parties on site.

Freighter operations are under pressure worldwide. This applies in particular to the older generation of freighters, which were flown by AFKLM/Martinair. Additionally, AFKLM announced to retire their MD11F's (in 2015-'16) and B747-combis (in 2016-'20) to reduce full freighter capacity and shift towards more belly (passenger aircraft). This stirred some discussion in the industry, which showed that getting facts clear versus emotions is important. (sources: interviews, Seabury 2015)

A distinction has to be made between the five types of logistical connections between Nairobi as the sole origin airport in Kenya and Schiphol (AMS) as the flower hub in the Netherlands:

1. Direct non-stop connection between origin NBO and destination AMS.
2. Connection NBO-AMS with a technical stop without transit handling.
3. Connection NBO-AMS with connecting flights (transit via IST, DOH, AUH etc.).
4. Connection NBO-alternative airport with trucking to AMS (transit via MST, LGG, BRU, FRA, LUX, etc.).
5. Connection NBO-alternative airport with connecting flights (transit via IST, IZM, DOH etc.) and trucking to AMS.

The main factors determining which connection type a carrier offers are the air traffic rights of the carrier, the slot availability at AMS and commercial reasons.

In the table below we summarise the results of our cargo capacity analysis. The data in this overview is based on interviews and evaluations of airline schedules that are available in public or supported by concerned parties.

In general, cargo capacity offered by airlines out of Kenya is available for exports to destinations worldwide. With our focus on the Netherlands, we have derived the air cargo capacity allocations available for flower exports with destination AMS.

Total relevant air cargo capacity from Kenya to the Netherlands in the high season is estimated at 3,334 tons per week. Of this, 66% is available as premium capacity, which means that flowers are flown directly into AMS, without transit handling. 47% of the total relevant capacity is available through nonstop flights into AMS, excluding technical stops.

Fig. 4 Relevant air cargo capacity analysis

In ton/week for flowers from Kenya to Netherlands, winter 2017/18, widebody aircraft only

Airline	Airline Code	Origin	Destination	Nonstop, technical stop, transit	Transit handling into AMS Y/N	Aircraft type	Service type Freighter (F) Passenger (P)	Flights per week	Total capacity high season in to/week
Saudi Airlines	SV	NBO	AMS	Technical stop	N	B747F	F	6	630
	SV	NBO	MST	Technical stop	Y	/B777F mix B747F /B777F mix	F	3	315
SV to NL									945
Emirates	EK	NBO	AMS	Nonstop	N	B777F	F	7	665
SkyCargo*	EK	NBO	DXB	Transit	Y	B777	P	14	0
EK to NL									665
KLM Martinair	MP	NBO	AMS	Nonstop	N	B747F	F	5	550
	KL	NBO	AMS	Nonstop	N	B747	P	7	98
KL MP to NL									648
Cargolux*	CV	NBO	LUX	Nonstop	Y	B747F	F	5	360
CV to NL									360
Turkish Airlines*	TK	NBO	IST-MST	Transit	Y	A330F	F	3	135
	TK	NBO	IZM-MST	Transit	Y	B747F	F	1	85
	TK	NBO	IZM-MST	Transit	Y	B747F	F	1	35
TK to NL									255
Kenya Airways	KQ	NBO	AMS	Nonstop	N	B787	P	7	140
KQ to NL									140
Singapore Airlines	SQ	NBO	AMS	Nonstop	N	B747F	F	1	110
SQ to NL									110
Lufthansa Cargo*	LH	NBO	FRA	Transit	Y	MD11F	F	4	90
	LH	NBO	FRA	Transit	Y	A340/A330	P	4	16
LH to NL									106
Qatar Airlines*	QR	NBO	DOH	Transit	Y	A330F	F	3	0
	QR	NBO	LGG	Transit	Y	A330F	F	2	60
	QR	NBO	LGG	Transit	Y	A330F	F	1	15
	QR	NBO	LGG	Transit	Y	B777F	F	1	30
	QR	NBO	DOH	Transit	Y	B787	P	7	0
QR to NL									105
Etihad*	EY	NBO	STN	Transit	Y	B777F	F	5	0
	EY	NBO	AUH	Transit	Y	A330	P	2	0
EY to NL									0
British Airways*	BA	NBO	LHR	Transit	Y	B747	P	7	0
BA to NL									0
Air France*	AF	NBO	CDG			B777	P	15	0
AF to NL									0
Relevant air cargo capacity from Kenya to NL in to/week									3,334
Premium capacity for flowers from Kenya directly into AMS, without transit handling en route									2,193
% share of relevant air cargo capacity									66%
Capacity on nonstop flights into AMS, excluding technical stops									1,563
% share of relevant air cargo capacity									47%

*Total capacity adjusted to estimated destination Netherlands share.

Source: Hortiwise from interviews and evaluations of publicly available airline schedules. Analysis based on winter schedule 2017/18, widebody aircraft only, not considering additional charter flights.

2.1.3 High/low seasons

- The flower freight industry knows a low season (roughly from June to September) and a high season (October to May). Some airlines reduce cargo capacity during the low season.
- Saudia reduced its frequency from 9 to 7 weekly flights, still offering a daily freighter to the Netherlands in the low season June to September. Around Valentine's 2018, Saudia has operated 4 additional freighter flights.
- Turkish Airlines had scheduled 12 additional freighter flights between 26 Jan and 12 Feb 2018, carrying 906 tonnes of cut roses from Kenya to the Netherlands.
- One of the interviewees mentioned that freight capacity is a limiting factor during Valentine's Day, resulting in roses going to other markets.
- Airlines plan to increase capacity again at the start of the high season, however, flower traders are afraid that airlines may deploy their aircraft on more profitable routes, depending on commercial factors. One of the main carriers reported load factors of about 95% during the October-May period and 90% during the low season from June to September, especially carriers operating freighters are contented with a high load factor out of NBO.
- In the past, the low season had a lower rate and capacity was reduced. It was indicated that this year the airlines might not offer a low season rate.
- One of the interviewed importers told us that during high season they were confronted with surcharges in case of extra shipments (on top of standard volumes). Also another interviewee told us that airlines charged extra during the Valentine's period this year. He said that this was the first time ever. This type of unexpected surcharges can cause big problems for importers supplying customers with fixed price contracts.
- If flower production delays because of cold weather or does not come at all (as happened this Mother's day period), it tends to be the forwarder who takes the hit paying for unused capacity at contract price.

2.1.4 Future capacity

- Most interviewees expect that demand for freight out of Kenya remains fairly stable in coming years. Some expect a bit of growth.
- One of the major airlines states that the flower market is growing with a high load factor on flights (ratio of the average load to total freight capacity). However, the airline has no intention to add extra flights as there is insufficient demand into Kenya to ensure route profitability.
- According to the interviewees, the key influence factors on future capacity out of Kenya are:
 - Cargo demand on imports into Kenya to ensure round trip profitability.
 - Seasonal demand variation for flowers.
 - Traffic rights situation.
 - No additional slots available for flights into Amsterdam in general.

2.1.5 Volumetric weight and combining with other cargo

Core airlines like Lufthansa, Emirates and AFKLM have announced that they are going to charge airfreight costs based on volumetric weight (other airlines might still allow room to play). In the past, airfreight rates for flowers were based on actual weight out of Kenya.

This means that when calculating the cost of moving a shipment, the carrier will consider both the weight and volume of the cargo, by converting the volume into a "weight equivalent," also known as volumetric weight (or sometimes dimensional weight). The carrier will then charge per kilogram for whichever is greater: the actual weight (also known as gross weight) or the volumetric weight.^{W20}

Volumetric cost calculations tend to be a big challenge for flower exporters because of the relative low weight to volume ratio of cut flowers. Interviewees expect airfreight costs to rise considerably because of the introduction of volumetric weight calculation.

Some statements by interviewees:

- In some cases, it might have happened that forwarders bought for instance 80 tons of capacity to sell only 72 tons.
- In the past, forwarders combined vegetables (over volumetric) and flowers (under volumetric) to get an aircraft loaded to the ideal weight.
- EU regulations on traceability have intensified and many Kenyan (small growers) failed to meet these requirements and reduced exports of vegetables such as beans, which are dense and heavily packed.
- Vegetable exports seem to become more high value (packages of mixed vegetables) and therefore lighter.
- Herbs has been upcoming as an export commodity. Herbs are even lighter than flowers. Exporters mix herbs with their heavier vegetable exports.
- Carnations are now exported by sea (and overall volumes might be down too). This also takes heavy stuff out of the mix.
- Avocado might be a new heavy export commodity, but Kenyan exporters are struggling to compete with other global suppliers. The quality from Kenya is not good enough and therefore the product is not competitive on the international market and cannot benefit from the worldwide growing demand for avocado.

2.1.6 Traffic rights

The freedoms of the air are a set of commercial aviation rights granting a country's airlines the privilege to enter and land in another country's airspace. The terms 'freedom' and 'right' are a shorthand way of referring to the type of international services permitted between two or more countries. For a good explanation of the air rights system, please refer to "Freedoms of the Air": https://en.wikipedia.org/wiki/Freedoms_of_the_air

So, for instance, if a foreign carrier wants to land in AMS, their home country needs to have at least an agreement for the 3rd and 4th freedom. The 5th freedom describes the right to operate between two foreign countries on a flight originating or ending in an airline's home country.

In case of the Kenyan-Netherlands freight corridor, the applicable 5th freedom traffic rights per carrier depend on the combination of 2 types of bilateral agreements (treaties):

1. Agreement between Kenya and the home country of the carrier.
2. Agreement between the Netherlands and the home country of the carrier.

Therefore, in order to get a complete picture, we need to know the bilateral agreements with Kenya and the Netherlands of all home countries of airlines flying the route (i.e. Kenya, Luxembourg, Germany, Netherlands, Turkey, United Arab Emirates, Saudi Arabia, Qatar, Singapore).

For instance, in case of Dutch carriers such as AFKLM and Martinair, a bilateral agreement between Kenya and the Netherlands applies, which is based on a treaty from 1981 which is still in effect. However, there are additional Memorandums of Understand (MOU) with aviation authorities, which are not public, that lay down the details about the traffic rights.

One of the reasons for the use of MOUs is that MOUs can be effective immediately and are more flexible.

Because MOUs are not public, there is no overview or list available with information about current air traffic rights for the various carriers. Agreements and MOUs are typically for undetermined time (no end date).

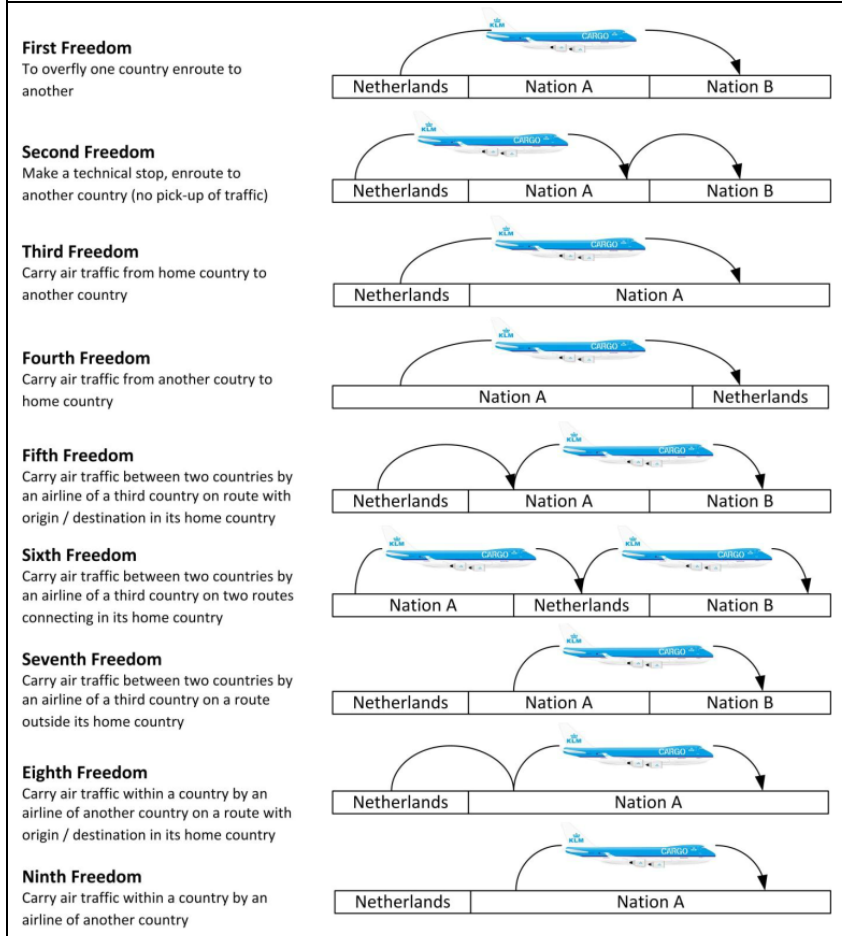
The more general bilateral Treaty between the Government of the Kingdom of the Netherlands and the Government of the Republic of Kenya for air services between and beyond their respective territories can be found online: <http://wetten.overheid.nl/BWBV0003868/1981-02-24>

Statements on traffic rights

- One of the interviewed growers would like to see Saudia Cargo fly non-stop NBO-AMS, which is obviously a matter of traffic rights. "In my view this is currently the key element for improvement with assistance of governmental bodies."
- In 2017, Etihad was temporarily denied 5th freedom traffic rights by Kenyan government. Therefore, Etihad was making a scheduled stop in Abu Dhabi before continuing to Amsterdam. The traffic rights situation seems to be back to normal for now.
- All Saudia flights from Kenya to Netherlands currently operate via Jeddah/Saudi Arabia. The current bilateral agreement between Kingdom of Saudi Arabia (KSA) and the Netherlands allows Saudia to operate a maximum of 6 flights per week into AMS (fully used). Flights into MST are not restricted.

- Saudia, Qatar, Turkish Airlines, as examples, do not have any 5th freedom traffic rights to operate nonstop from Kenya to the Netherlands. To establish these, an amendment of both bilateral agreements home country-Kenya and home country-NL would be needed.
- With respect to the agreement with Saudi Arabia, a representative of the Dutch Ministry of Infrastructure explained that "the KSA is in conversation with the EU and as it is custom the Netherlands does nothing with bilateral negotiations on extension of traffic rights in the run up to and during a negotiating mandate for the European Commission. It is expected that such a mandate will be given to the Commission shortly granted. If that is not the case, then the Netherlands is free to go with Saudi Arabia and negotiate new traffic rights such as the fifth freedom."
- With respect to UAE, the bilateral agreement between UAE and Kenya covers the 3rd and 4th Freedom Rights between the two countries, as well as 5th Freedom Rights from Kenya to the Netherlands. The current agreement, including its amendments over the years, is considered to be sufficient in terms of cargo capacities and rights.
- When determining the aviation policy, a national Ministry of Infrastructure, in practice, tends to look at the interests of own airlines first and to a lesser extent at the interests of other sectors such as horticulture.
- 5th freedom rights exist but may not be exercised/not be commercially viable as the carrier's home country is located too close to the Netherlands.
- Airlines mentioned that providing traffic rights from the relative authorities in Kenya is really challenging. Foreign carriers are forced to use local airlines traffic rights and this increases the costs.

Fig. 5 Freedoms of the skies



Source: Schmidt (2013)

Statements on connections with stopovers

- Several interviewees mention their concern about the negative environmental impact of stopovers: since an aircraft pollutes more (CO₂) when it has to fly more unnecessary km's. More importantly, an aircraft consumes most fuel and produces most CO₂ at take-off and climbing to cruising altitude. The result is that consumers purchase a product with an even higher environmental footprint.
- Growers and traders are also concerned about the impact of connecting flights via transit hubs on product quality. Products tend to arrive in the end market with a lower quality due to additional handling and exposure to ambient conditions on tarmac in transit, in combination with increased organic heating due to longer flight duration. Furthermore, there is a higher risk of quality issues and force majeure in a shipment.
- It is not always clear why some growers choose direct or indirect connections. There is a need for better insight into the effect on CO₂, price/costs, impact on quality.
- Saudia Cargo mentioned that their transit stop in Jeddah allows for refuelling at lower cost. Furthermore, in case of lack of flowers destined for the Netherlands, flowers for the KSA market can be loaded in a dedicated aircraft compartment and offloaded in Jeddah to optimize load out of Kenya.

2.1.7 Acquisitions by logistics specialists

In 2017, Panalpina completed the takeover of Kenya-based forwarder Air Connection and concluded talks to acquire Dutch perishables specialist Interfresh Airfreight Handling with its sister firms and parts of the Cool Chain Group in Germany. The purchase of Air Connection followed the takeover of Airflo, another Kenyan perishables specialist forwarder, in 2016. These acquisitions have dramatically boosted Panalpina's position in the perishables sector.^{W8}

Another multinational logistics giant, Kuehne+Nagel (K+N), also moved to strengthen its position in the global perishables arena as it took over Commodity Forwarders Inc. (CFI), the leading perishables specialist in the US, as well as Kenya-based Trillvane. Together, the two acquisitions add over 150,000 tons of perishables a year to K+N's volume.^{W8}

Retailers want a certain price point, which puts pressure on margins and tilts the field towards players that have economies of scale. There is a strong tendency to consolidate and the business is becoming more global. In a recent web article, Eric Mauroux, Global Head of Perishables at Air France KLM Martinair Cargo (AFKLM), stated that multinational forwarders are buying perishables specialists as a reflection of strong interest in this sector.^{W8}

2.2 What are developments with respect to new markets/destinations for Kenyan flowers?

According to ITC Trademap statistics (based on Custom's data from Eurostat and UN Comtrade), Kenyan cut flower exports amounted to 149 thousand tonnes in 2017 (KFC reported 160 thousand tons^{W15}). Kenyan export volumes have shown steady growth over the past years. The Netherlands is the leading destination of Kenyan cut flower exports, receiving no less than 59% of the total export volume.

	2013	share	2015	share	2017	share
Netherlands	75,601	62%	83,627	60%	88,231	59%
United Kingdom	17,506	14%	19,075	14%	19,056	13%
Russian Federation	4,728	3%	3,320	2%	4,677	3%
Norway	3,116	3%	3,960	3%	4,612	3%
Germany	4,993	3%	4,436	3%	4,509	3%
Saudi Arabia	1,046	2%	3,358	3%	4,330	3%
United Arab Emirates	1,815	2%	3,174	2%	3,930	3%
Australia	2,103	2%	2,779	2%	3,272	2%
Switzerland	1,195	1%	1,449	1%	1,634	1%
Japan	1,531	1%	1,267	1%	1,621	1%
Sweden	1,394	1%	1,369	1%	1,581	1%
France	689	1%	1,424	1%	1,567	1%
Latvia	72	0%	78	0%	1,073	1%
Italy	456	0%	558	0%	891	1%
USA	472	1%	861	0%	806	1%
other countries	3,753	4%	5,734	4%	7,532	5%

Total	120,470	100%	136,469	100%	149,322	100%
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Source: Hortiwise based on ITC Trademap (2018)

According to ITC Trademap, Kenyan cut flower exports amounted to US\$ 540 million in 2017. Note that KFC reported 82.25 Kshs Billions (about US\$ 800 million).^{W15}

The Netherlands is still by far the leading importer of Kenyan cut flowers, taking up more than half the value of Kenyan exports. Netherlands import value and share have been fairly stable over the past years. Exports to the UK have been stagnating somewhat, but are still substantial at US\$ 85 million or 16% last year. Upcoming export destinations are Norway, UAE, Saudi Arabia, France and Latvia. The export value to the USA has been stable and fluctuated around 3 to 4 million US\$ over the past 5 years.

	2013	share	2015	share	2017	share
Netherlands	250,121	52%	247,080	53%	281,333	52%
United Kingdom	92,726	19%	91,341	17%	85,149	16%
Russian Federation	21,187	4%	14,589	3%	20,729	4%
Norway	14,076	3%	16,037	4%	20,178	4%
Germany	22,140	5%	18,296	4%	19,872	4%
United Arab Emirates	7,411	2%	12,337	3%	14,886	3%
Saudi Arabia	3,209	1%	9,202	3%	14,816	3%
Australia	20,356	4%	13,187	2%	13,503	2%
Japan	10,250	2%	7,498	1%	7,537	1%
Switzerland	6,282	1%	6,181	1%	6,503	1%
France	3,870	1%	6,217	1%	6,428	1%
Sweden	6,435	1%	5,549	1%	6,274	1%
Latvia	515	0%	427	0%	4,314	1%
Italy	2,481	1%	2,712	1%	3,945	1%
United States of America	3,170	1%	4,041	1%	3,839	1%
other countries	15,769	3%	24,447	5%	31,589	6%
Total	479,998	100%	479,141	100%	540,895	100%

Source: Hortiwise based on ITC Trademap (2018)

Other observations/statements:

- While a small fraction of Kenya's flowers are currently exported to the USA, the air freight stopover in Europe is a costly barrier to greater market access. Kenya's flower producers are hoping that direct flights set to open in October between Nairobi and New York could help them to put down roots in the US market. One of the growers noted, however, that direct flights are a good opportunity, but only if there is enough cargo space. It also depends on how competitive Kenya can be against the South American exporters, which are very strong in terms of the US market.^{W6}
- Saudia is not really participating in developing flower airfreight lines towards new markets due to their current limitations: with today's lack of cold chain facilities in Jeddah Saudia is not accepting transit shipments to Far Eastern markets. At the same time, a local flower market in Saudi Arabia has been developing over the last 2-3 years. Today, Saudia is shipping 20 to 30 tons/week into KSA, which was more or less non-existent earlier.

- Interviewees expect that particularly flower exports to China, India, Turkey, Eastern Europe and North America will be developed in the coming years.

2.3 What is the added value of flower logistics (from Kenya) on the broader Dutch economy?

2.3.1 Research on behalf of Dutch Ministry of Infrastructure and Water Management

In the past couple of years, the Dutch Ministry of Infrastructure and Water Management has asked a number of research institutes such as Decisio and SEO to provide insight into, amongst others, the value and relevance of the hub operation at Schiphol Airport for the Dutch economy. (Reports: Decisio 2015, SEO 2015, SEO 2018a, SEO 2018b)

Most resulting reports distinguish between *direct*, *indirect backward* and *indirect forward* effects of the Schiphol hub on the Dutch economy.

The economic contribution of the airport is provided by companies in the aviation sector (the direct economic contribution), but also by the suppliers of these companies and companies that establish themselves in the region because of the good accessibility by air (the indirect economic contribution). (Decisio 2015)

According to Decision, 65,000 jobs (around 55,000 FTEs) are attributable to airport activities at Schiphol. These activities account for an added value of more than EUR 5.8 billion. The backward indirect activity accounts for almost 50,000 jobs (around 40,000 FTEs) and an added value of around EUR 3.1 billion. (Decisio 2015)

Note that IATA, the trade association of the world's airlines, has also published a series of (lobby) publications on the importance of air transport in a number of countries. A special brochure is issued on the Netherlands: "The Importance of Air Transport to the Netherlands". Overall, IATA estimates that 94,000 jobs are supported directly by the total air transport sector and 300,000 jobs indirectly. Furthermore, the sector is estimated to contribute US\$ 15.5 billion gross value to the Dutch national GDP (2014, excluding spending by tourists). (IATA 2017d)

Literature indicate that an airport is an important location factor for many companies. A good network with many direct connections provides time and cost savings for the international business community. Research furthermore shows that there is a clear relationship between the network quality and the size of an airport on the one hand and the economic development of a region on the other. (Decisio 2015)

The problem of the indirect forward contribution to the economy is that its size is difficult to determine. For many companies, accessibility by air is very important, but that also applies to road

infrastructure, the quality of the workforce and the ICT infrastructure, to name just a few factors. Isolating the importance of Schiphol in the total of location factors is difficult. (Decisio 2015)

With respect to the added value of the airfreight of flowers from Kenya to the Netherlands, we see that some (older) reports mention the impact of flower (or perishables) logistics, but do not quantify the effects. The type of effects on the broader economy are generally in line with those of other sectors.

2.3.2 VAT in case of re-exported flowers

A specific question that was raised is if trading flowers via the Netherlands (re-exported to third country) is somehow beneficial to the Netherlands Treasury through the VAT system.

VAT is a type of tax that is assessed incrementally, based on the increase in value of a product or service at each stage of production or distribution. VAT that is paid by a business to other businesses on the supplies that it receives is known as "input VAT" (in our case, VAT on purchased flowers and other input supplies). Businesses are generally able to recover input VAT as long as the input VAT is attributable to its taxable outputs. The final consumer does not receive a credit for the VAT paid. The net effect of this is that each supplier in the chain remits tax on the value added, and ultimately the tax is paid by the end consumer.^{W14}

So, it seems there is no substantial net VAT-effect on the broader Dutch economy of Kenyan flowers re-exported via the Netherlands. The Dutch Treasury does not benefit directly from VAT collection in case of re-exported flowers:

Case 1: Kenyan flowers destined for EU consumer (other than Dutch, for instance German)

- Kenya-NL: Kenyan exporter does not add VAT when exporting to a Dutch importing party. The Dutch importer (who imports from non-EU country) declares the imported products and pays Dutch VAT on imported goods, which he can recover.
- Intra-NL: The Dutch importing party adds VAT when selling to another Dutch distributor, for instance an export wholesaler who can also recover the VAT.
- NL-Germany: Dutch exporter applies 0% VAT tariff when selling to German distributor.
- Within Germany: The local distributor(s) and/or retailer add local VAT tariff for flowers. The German consumer pays local VAT tariff, which goes to the German Treasury (country where the flowers are 'consumed', in this case Germany).

Case 2: Kenyan flowers destined for non-EU consumer:

- Similar to exporting to non-Dutch EU-consumer. The Dutch exporter adds 0% VAT to flowers exported to non-EU countries such as the USA.

Furthermore, logistical and other services related to the trade of Kenyan flowers via the Netherlands are also subject to VAT, but because all Dutch businesses involved are able to recover paid input VAT, the effect is similar to the trade in the goods itself.

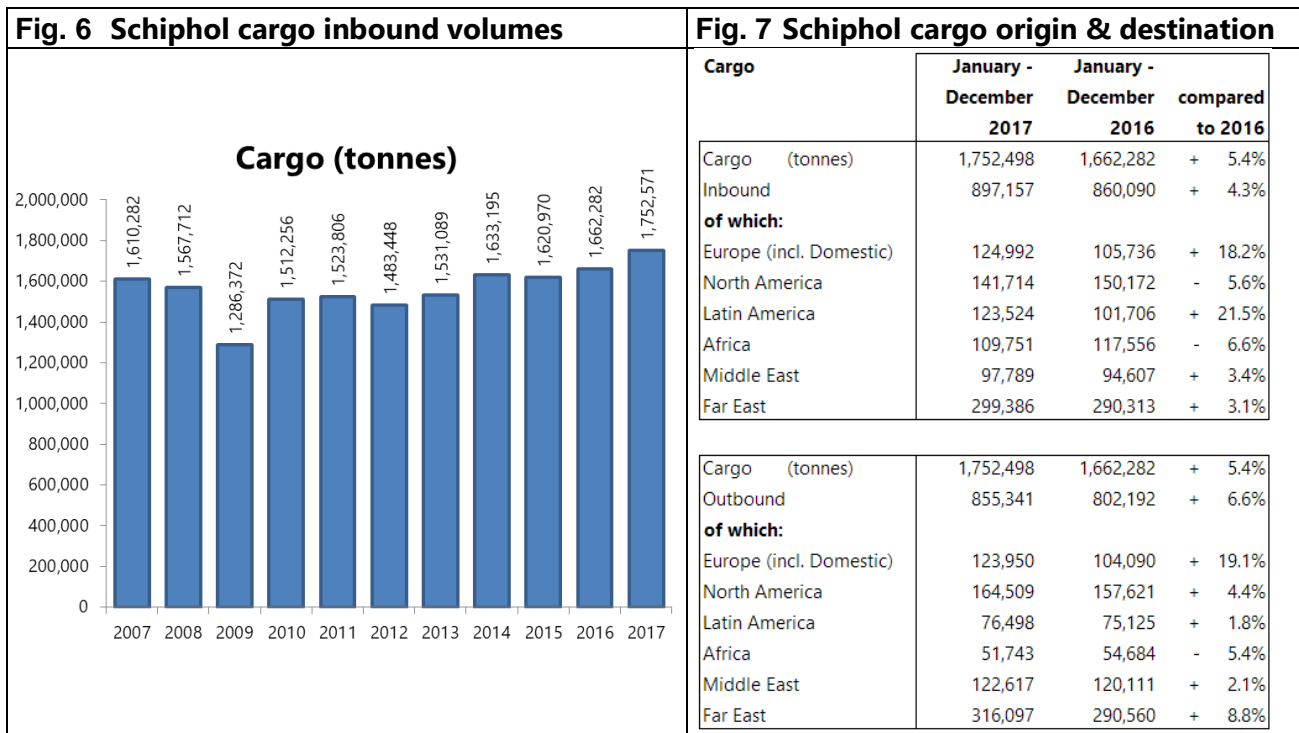
Of course, in case of Kenyan flowers destined for Dutch consumers, the Dutch Treasury benefits from the VAT paid by the Dutch consumer:

- Kenya-NL: Kenyan exporter does not add VAT to its product when exporting to a Dutch importing party. The Dutch importer (who imports from non-EU country) declares the imported products with the Dutch Custom's and pays Dutch VAT on imported goods, which he can recover.
- Intra-NL: The Dutch importing party adds VAT when selling to another Dutch distributor. The Dutch distributor adds VAT when selling to a Dutch retailer. Both distributors and retailers can recover the paid input VAT. The retailer adds VAT when selling to the Dutch consumer. The Dutch consumer pays VAT, which goes to the Dutch Treasury.

2.4 What is the role of AMS airport and are there alternatives?

2.4.1 Schiphol inbound cargo volume

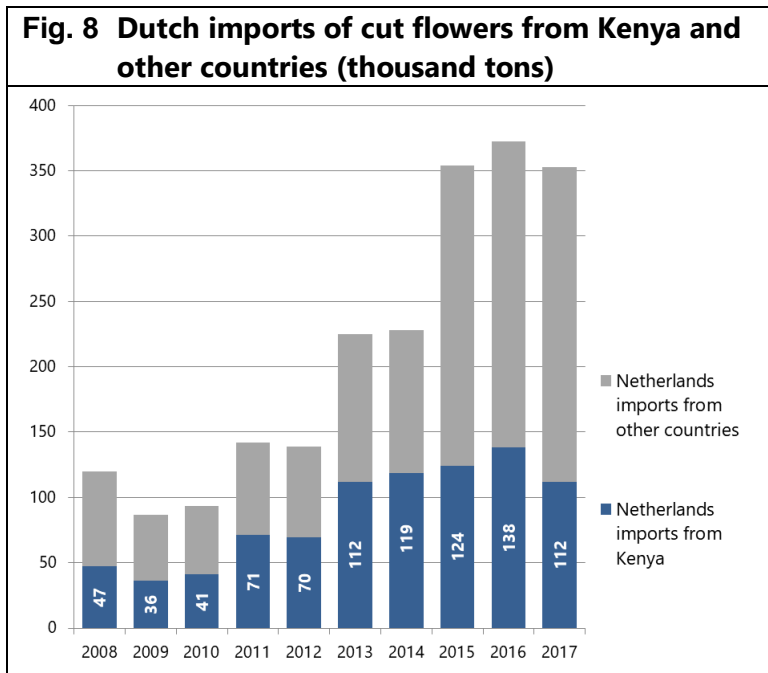
As the figures below show, total inbound cargo volumes at Schiphol airport have been steadily increasing since 2010 and reached 1.7 million tons in 2017. The largest inbound and outbound growth was registered for cargo within Europe. The total cargo originating in Africa showed a decline of 6.6% in 2017.



Source: Schiphol (2017a)

Source: Schiphol (2017b)

According to ITC Trademap, Dutch imports of cut flowers (HS0603) amounted to 352 thousand tons (both land and air) in 2017. Kenyan flowers accounted for 111 thousand tons. Kenya's flower export volumes to the Netherlands has more than doubled over the past ten years.



Source: FlowerWatch based on ITC Trademap (2018)

Kenya's share in total Dutch imports has been fluctuating between 30% and 50% over the past ten years. Lately, Kenya's share in imports has been decreasing somewhat due to increasing imports from Ethiopia. Ethiopian flowers are mostly imported via airports in Belgium.

When combining Schiphol and ITC Trademap figures, it is fair to conclude that Kenyan flowers represent a vast share of Schiphol's inbound cargo from Africa.

2.4.2 Slot availability at AMS

In the past, there were always sufficient landing slots available at AMS. However, this has changed: Air Traffic Movement (ATM) capacity at AMS is agreed in 'Covenants on the future development of Amsterdam Airport Schiphol' i.e. the Alders Platform (2008). The maximum has been set to 500,000 ATM movements until 2020.^{W10}

This was the first time AMS experienced slot capacity constraints. Warehouses around AMS airport like Menzies took a big hit. They lost business and had to lay off staff.

Slot allocation is not linked to an airline's air traffic rights. Slot allocation is coordinated by the slot coordinator. Slots in the Netherlands are regulated in IATA and EU rules. The Slot Coordinator (ACNL) is, in the Netherlands, responsible for executing these rules. Usually, slot applications are done by airline network planners.

According to IATA and EU regulations, in order to retain their historical rights to slots, airlines need to fly 80% of their slots according to the requested flight schedule. This requirement proves to be challenging for some full freighter operators. At a certain moment, a lot of foreign freighters lost their rights to landing slots as the slot coordinator increased enforcement.^{W10} Some full freighter

operations are difficult to fit into slots. The major issue for full freighter operations is the difficulty to fly according to a fixed on-time schedule.

AMS expects the number of full freighter slots to remain relatively stable in comparison to the unconstrained situation. In contrast with some other large cargo airports, Schiphol is a typical full-freighter hub, and has the largest number of freighter operators in Europe.^{W10}

Capacity constraints pose a threat to those full freighter operators that do not have historical slots or 'lease' slots from other carriers. Moreover, there will be less room for incidental full-freighter operations, while scheduled operators are expected to sustain – and expand if possible – their current operations.^{W10}

The analysis of the current capacity demand of the inbound and outbound peaks at Schiphol Airport especially shows scarcity in the morning peak between 07:50 and 10:39 and the evening peak between 18:20 and 21:39. In the mid-day peak periods show some room for further growth. With respect to future demand, especially the inbound peak capacity seems insufficient to accommodate aviation demand in 2023. (SEO 2018a)

Slot scarcity at Amsterdam Airport Schiphol explained in more detail:

<https://www.schiphol.nl/en/cargo/page/slot-scarcity-at-amsterdam-airport-schiphol-explained/>

According to interviewees, the challenging situation with slots is one of the reasons of the rising share of Maastricht airport and other alternative airports.

2.4.3 Schiphol versus other alternative airports

Statements about direct connections to Schiphol airport

- Amsterdam is the main hub for Kenyan flowers and for South American flowers targeting the European markets. A leading forwarder mentioned that they will always have a facility in AMS, "Hey, it is the Hub!".
- Industry players have a strong preference for direct non-stop flights into Amsterdam. One of the interviewed growers mentioned that the direct non-stop flights to AMS are essential for a proper cold chain and reliability.
- Landing in Amsterdam gives the opportunity to push cargo forward in the ex-AMS passenger and freighter network. In AMS, you can do freighter to passenger within an airline network. This cannot be done for instance on Heathrow, which can only handle passenger-passenger transit.
- Another advantage that was frequently mentioned of arriving directly at AMS referred to the well-developed services (NVWA, Customs) at AMS. Service institutions around AMS are well-equipped and experienced in flowers. A characteristic of the Dutch supply chain is the cooperation with authorities in improving logistics and formalities.
- On the other hand, in the past handling at AMS typically took about 3 hours. Lately, however, handling can take 4 or even 5 hours. As a result, the advantage in terms of time of flowers arriving at AMS compared to other airports is getting smaller.

Statements about alternative inbound airports

- Some NBO freighters prefer operating into MST instead of AMS because MST has less restrictions in terms of slots, airport costs, slot availabilities.
- Interviewees are not decided if the increasing volumes of flowers arriving at alternative airports result in a weakening of the Dutch flower trade. The Dutch position as the flower hub is still very strong, and many think we are still far from the tipping point where traders will massively decide to change to alternative logistical routes bypassing the Netherlands.
- Some interviewees mentioned that airlines landing in other airports than Schiphol, (should) charge lower fees in order to accommodate for the added truck transport.
- Besides the extra costs for trucking, also another leg and a new situation is added where things can go wrong when arriving at alternative airports.
- When arriving at alternative airports, extra time is also added, which increases the chance that flowers stay overnight, heating up and losing quality and value.
- One of the logistics service providers mentioned that on the other airports, there are no facilities for breaking split pallets. Split pallets will still be trucked to AMS, then distributed. Adding time, costs and chances for failures. On AMS, parties like K+N, Panalpina and IP Handlers have the capacity to split pallets. With flights arriving in LGG, BRU, MST, break bulk is still done at AMS airport.
- Other airports lack facilities and transit connections.
- MST has only 5 parking places for aircraft and no warehouses.
- LGG is setup as a DHL hub, which is courier business, not perishables.
- Capacity at the alternative airports seems also limited. LGG and BRU are already busy. They cannot absorb 15-20 flights a week extra.
- On the other hand, according to a recent NRC newspaper article, Maastricht Aachen Airport offers sufficient space and availability of facilities. The track, which was extended in December 2017, is now 2,700 meters and long enough for a Boeing 777 cargo plane to take off.^{W17}
- With more transport between the airports and the market place, trucking companies had to buy new trucks. Before, they did airport runs in the morning and auction trolleys in the afternoon. Now, they spent more time driving, so they need more trucks.

2.4.4 Sea freight and other alternative modalities

- Most interviewees mention that sea freight is (still) too difficult for various reasons: Mombasa port facilities, connections (frequencies, sailing times), quality requirements, volume requirements, risks, etc. It should be noted that this response was recorded with members from both the airfreight industry (sea freight is a competitor) and the general flower industry respondents.
- One of the interviewees said that most likely there is a lack of innovators in this industry. Only three big farms in Kenya will actually innovate, the rest are followers.
- Royal FloraHolland (RFH) has been looking for a long time at different types of modalities: rail, inland shipping, sea freight. Today, RFH is less involved in 'after market place' logistics (i.e. logistics after auction process) and more focuses on improving the supply side.

The main conclusions from the Hortiwise (2013) study on *“The Kenyan-Dutch Sea Freight Supply Chain for Roses”* still seem adequate:

- Much has been learned so far and while some trials failed others have developed into regular supply lines. The number of steady lines from Kenya and other African countries to the European market, however, is still modest.
- When problems occurred, it was often because of a combination of existing quality issues with roses (botrytis, downy mildew), deficient cold chain management and the unavailability of packaging specifically designed for sea freight. Projects also encountered problems due to poor shipping connections and frequent delays.
- An important lesson learnt is that sea transport is only possible if the cold chain and other technical conditions are optimised and fully under control, starting at the nursery all along the supply chain until the roses reach their final customer. In our view, all required knowledge and technology is either available or can be acquired through additional research and testing.

2.5 Other related topics mentioned during interviews

Ongoing projects at JKIA

Four major projects for rehabilitation and newly construction are now carried out at JKIA as mentioned in the prefeasibility study for the new terminal (METI 2013):

1. Rehabilitation of the new runway, taxiway and apron.
2. Rehabilitation of existing passenger terminal building, including operation efficiency upgrade.
3. Construction of the new passenger terminal building.
4. Construction of the new runway. The construction project of the 2nd runway aims at the reinforcement of stable take-off and landing functions of the aircraft with two runways from the viewpoint of the runway maintenance, rather than the increase in the runway capacity.

Projects 1 to 3 are scheduled to be finished by 2023 according to prefeasibility study. The 2nd runway is planned to be finished by 2029.

Distribution in boxes

- In the USA and Japan, transport, sales and distribution is nowadays almost exclusively in boxes. In Western Europe and particularly the auction and its associated growers seem to be very much sticking with water buckets.
- According to several interviewed persons, it is just a matter of time until the industry makes a shift towards more economical, environmental friendly and quality-efficient distribution in boxes packed at farm level and distributed to consignee.

Transport of flowers between forwarder and ground handling agent at Nairobi airport

- With respect to NBO airport transport from forwarder warehouse to ground handling agent, it was complained that transport still happens non-refrigerated. After all the proper cooling has been applied by the forwarder, the flowers then go into the hot sun or the hot Kenyan nights to be transported on a bumpy road and then they often have to wait in line to have the ULD's

being delivered. Though several freight forwarders are working on options for this problem, it is the grower's view that also the forwarder needs to invest here and as customers the grower should be willing to pay extra for these services.

Parking positions on Nairobi airport

- Ideally, forwarders would load straight from the warehouse into the aircraft. Freighter parking positions at NBO airport close to the warehouse, however, are currently limited to six. Various forwarders and airline handlers, however, complained that the perishable aircrafts were not always able to park close to the handlers warehouse. Often, these aircrafts have to park on the other side of the airport, which can take over 30 minutes to get the ULD's to the other side where they are parked for hours in the hot and or rain. Several industry members requested that Nairobi airport allocates their parking lots more efficiently and give large perishable carriers preferred parking in front of the warehouses over small intra-Africa aircrafts. There appear to be more than enough parking spots close to the perishable handlers, but sometimes small cargo aircrafts with dry goods can block the space.

Holland Flower Alliance (HFA)

- HFA is an enterprising group founded in 2016 by Royal FloraHolland, Schiphol Cargo and KLM Cargo dedicated to the pursuit of innovation and sustainability in the floral supply chain.^{W9}
- The group was formed during the discussion in the industry following AFKLM's notice to reduce freight capacity.
- The Holland Flower Alliance's ambition is to make the Amsterdam region the world's preferred flower hub. The Holland Flower Alliance is currently active on five levels: process innovation, information sharing, packaging, branding and governance.^{W9}
- In March 2017, Air France-KLM announced the rollout of its cloud-based data-sharing platform, providing real-time shipping information for horticultural products via the Holland Flower Alliance. Working with Schiphol's Smart Cargo Mainport Program, AFKLM took all the shipment data – the types of flowers, the number of flowers in each box, the number of boxes – and linked it to the air waybill via an online portal, which then generates a unique GLN code that gives users access to the data in one place. The aim is to measure temperature and time the flowers were shipped.^{W1}

Customs documentation

- Several interviewed industry players stressed the importance of adequate and swift Customs documentation services and clearance at Kenya side.
- In the past years, the number of shipments that needs to be processed has increased dramatically (more and smaller export shipments).
- From interviews, we heard that numerous regulatory agencies with overlapping mandates can cause delays in cargo clearance at Kenya side. Documents are often missing because procedures take a lot of time and authorities are not available 24/7. As a result, flowers cannot immediately be cleared in upon arrival.

Miscellaneous

- Space situation/handling capacities at ground handlers are insufficient to properly handle flower volumes (at NBO).
- Runway closures for maintenance in NBO may take longer than at other airports.
- Information sharing: tracking and tracing is an area where further improvement is possible and needed.
- There is a need for increased environmental awareness, particularly with respect to the amounts of packaging/plastics used in the supply chain.
- Need for better coordination among involved parties to address joint issues.

3 CONCLUSIONS AND RECOMMENDATIONS

3.1 Conclusions

Our interviews with Dutch and Kenyan players have confirmed that there is a feeling among stakeholders that the airfreight situation from Kenya to the Netherlands with respect to the export of cut flowers is not always optimal. Issues that have been mentioned relate to a wide variety of topics, but can be divided into two main areas.

The first area is related to policy-related *regulatory limitations* (such as air traffic rights, landing slot limitations), which result in restrictions in terms of air traffic routing and availability of direct connections. We noticed that industry players struggle to understand why airlines have to fly inefficient routes with 'unnecessary stopovers' and why the so-called chain influencers (government, aviation and airport authorities) are not able or willing to consider the needs of the industry for direct and efficient airfreight connections.

Most other issues that were mentioned by the interviewees are related to various *more practical supply chain performance matters*. There seems ample room for improvement in processes with both industry players and supporting actors.

Bottom line is that objectives of different parties are not always aligned, which results in a logistical system that is underperforming with considerable costs for industry players, the environment and the final consumers.

RQ1: What are current and future developments with respect to freight capacity?

According to airfreight industry publications, global demand for cargo is now growing faster than capacity, leading to increased pressure on global cargo availability. On the other hand, it is expected that the market share of freighters (as compared to belly in passenger aircrafts) will continue to decline worldwide. Freighter operations have been under pressure worldwide.

Until recently, airfreight supply from freighters came naturally into the Kenya airfreight market. However, other regions are increasingly more profitable for carriers, because of growing demand and higher revenues, but also because of insufficient cargo demand into Kenya to ensure round trip profitability. The flower industry is starting to feel the stronger competition from other regions/routes, for instance the introduction of new surcharges during last Valentine's Day.

Simon van der Burg of Timaflo (grower in Kenya) in a recent article: *"I am not at all against increasing freight rates. Reliability and always flying is much more important to me. Because if the freight becomes more expensive, the bar for quality automatically goes up. Less mess on the market means a better price."*^{W21}

When looking at the current airfreight capacity situation, a distinction can be made between five types of connections between Nairobi as the sole origin airport in Kenya and Schiphol (AMS) as the flower hub in the Netherlands:

1. Direct non-stop connection between origin NBO and destination AMS.
2. Connection NBO-AMS with a technical stop without transit handling.
3. Connection NBO-AMS with connecting flights (transit via IST, DOH, AUH etc.).
4. Connection NBO-alternative airport with trucking to AMS (transit via MST, LGG, BRU, FRA, LUX, etc.).
5. Connection NBO-alternative airport with connecting flights (transit via IST, IZM, DOH etc.) and trucking to AMS.

The main factors determining which connection type carriers offer are the air traffic rights of the carrier, the slot availability at AMS and commercial reasons.

Total relevant air cargo capacity from Kenya to the Netherlands in the high season is estimated at 3,334 tons per week. Of this, 66% is available as premium capacity, which means that flowers are flown directly into AMS, without transit handling. 47% of the total relevant capacity is available through nonstop flights into AMS, excluding technical stops.

The air traffic rights, or freedoms of the air, is a set of commercial aviation rights granting a country's airlines the privilege to enter and land in another country's airspace. In case of the Kenyan-Netherlands freight corridor, the applicable 5th freedom traffic rights per carrier depend on the combination of two types of bilateral agreements (treaties):

1. Agreement between Kenya and the home country of the carrier.
2. Agreement between the Netherlands and the home country of the carrier.

There is no overview or list available with information about current air traffic rights of the various carriers. For that overview we would need to know the bilateral agreements with Kenya and the Netherlands of all home countries of airlines flying the route. On top of that, there are Memorandums of Understand (MOU) with aviation authorities, which are not public, that lay down the actual details about the traffic rights.

When determining the aviation policy, a national Ministry of Infrastructure, in practice, tends to look at the commercial interests of its own airlines first and to a lesser extent at the interests of other sectors (such as horticulture) or at environmental concerns. Whether this is the result of differences in lobbying efforts is not clear. In fact, the entire system does not appear very transparent, both on Dutch and Kenyan side.

RQ2: What are developments with respect to new markets/destinations for Kenyan flowers?

The Netherlands remains the leading destination of Kenyan flower exports, receiving no less than 88 thousand tons or 59% of the total export volume. Exports to the UK have been stagnating somewhat, but are still substantial (16%). Upcoming export destinations are Norway, UAE, Saudi Arabia, France and Latvia.

Many talk about exports to the USA, but Kenya's export value to the USA has been rather stagnant at US\$ 3-4 million (about 800 tons) in the past couple of years. Kenya's flower producers are hoping direct flights set to open in October between Nairobi and New York could help them develop this market.

RQ3: What is the added value of flower logistics (from Kenya) on the broader Dutch economy?

Following the broader discussion about the impact of the growing air traffic, the Dutch Ministry of Infrastructure and Water Management has already asked a number of research institutes to provide (objective) insight into the value and relevance of the hub operation at Schiphol Airport for the Dutch economy.

Most of these studies distinguish between *direct*, *indirect backward* and *indirect forward* effects of the Schiphol hub on the Dutch economy. The economic contribution of the airport is provided by companies in the aviation sector (the direct economic contribution), but also by the suppliers of these companies and companies that establish themselves in the region because of the good accessibility by air (the indirect economic contribution).

An airport is an important location factor for many companies. A good network with many connections provides time and cost savings. Research furthermore shows that there is a clear relationship between the network quality and the size of an airport on the one hand and the economic development of a region on the other. The studies conclude that the problem of the indirect forward contribution to the economy is that its size is difficult to determine.

With respect to the added value of the airfreight of flowers, we see that some (older) reports mention the impact of flower (or perishables) logistics, but do not quantify the effects. The type of effects on the broader economy are generally in line with those of other sectors (mentioned before).

RQ4: What is the role of AMS airport and are there alternatives?

Amsterdam is still the main hub for Kenyan flowers and for South American flowers targeting the European markets (and Russia). Kenya's flower export volumes to the Netherlands has more than doubled over the past ten years and Kenyan flowers represent a vast share of Schiphol's inbound cargo from Africa.

In the past, there were always sufficient landing slots available at Schiphol Airport. However, this has changed: Air Traffic Movement (ATM) capacity at AMS has now been set on 500,000 ATM movements until 2020. The new situation proves to be particularly challenging for some full freighter operators. According to interviewees, the situation with slots is one of the main reasons that carriers choose to arrive at Maastricht and other alternative airports.

Growers and other industry players have a strong preference for direct non-stop flights into Amsterdam. Interviewed growers mentioned that the direct non-stop flights to AMS are essential for a proper cold chain and reliability. Then again, many other stakeholders mention that facilities and services at alternative airports are adequate and still improving. The extra time and effort to transport the flowers from Maastricht, Liege or Brussels to the distribution centres in the Netherlands is not considered optimal, but also not a major hindrance.

Interviewees are not decided on the matter if the increasing volumes of flowers arriving at alternative airports result in a weakening of the Dutch flower trade. Currently, most flowers arriving at the alternative airports are destined for distributors in the Netherlands. The Dutch position as the major hub for African, South American and Dutch flowers is still very strong, and many think we are still far from the tipping point where traders will massively decide to change to alternative logistical routes bypassing the Netherlands. Nonetheless, as the volumes at alternative airports increase, distributors and logistical service providers will be more and more tempted to set up facilities near these airports. The question is: will traders still buy just as many Dutch flowers if they pick up their African and South American flowers in Germany, Belgium or the UK?

3.2 Recommendations

Supply chain performance matters: a need for a Logistics Working Group

During the study we found various more or less practical topics related to the efficiency and performance of the supply chain that require a coordinated follow up. In order to address these joint issues, it is advised to set up a Logistics Work Group (on the Kenyan side).

The working group should consist of a representation of all relevant stakeholders, i.e. growers, forwarders, airlines, airport, government institutions, etc. The working group should be coordinated by one (or a couple) of their associations, i.e. Kenya Flower Council (KFC), Freight Forwarders Association, etc.

The primary task of the Logistics Working Group is to address logistics performance issues which have been identified during the interviews for this study, as well as other relevant issues:

- Freighter parking position issue on Nairobi airport.
- Critical problems related to lengthy Customs documentation services and numerous regulatory agencies with overlapping mandates that delay cargo clearance at Kenya export side.
- Unrefrigerated transport of flowers between forwarder and ground handling agent at Nairobi airport.
- Volumetric weight: prepare the industry for the change to volumetric cost calculation and the cost increases in the flower supply chain through change to volume based air fares and its impact on Kenyan flower exports. What is optimal approach to new situation in terms of packaging, efficiency, assortment/other products?

- ❑ A follow-up study that zooms in on the consequences of the introduction of newer airplanes with larger freight capacity (such as B777's). What is needed from the industry for a more efficient cargo use of newer passenger airplanes?
- ❑ Other still open issues mentioned in previous studies (such as Hortiwise 2012), etc.

Industry advocacy towards Kenyan and Dutch authorities

The Logistics Working Group can also play a role in the coordination of industry advocacy efforts towards Kenyan and Dutch authorities on matters related to for instance air traffic rights, , especially relating to 5th freedom rights Kenya-NL.

Recommended follow-up studies/projects:

1. Kenyan Logistical Competiveness Study

There are opportunities to learn from developments in other (competing) global flower supply chains, such as the South America-North America channel. How is Kenya performing and developing as compared to for instance the Colombia-US supply chain? Is Kenya ready for major developments in the flower industry, such as webtrading?

2. Review and update of sea freight studies

A couple of years ago, a number of studies on the potential of sea freight were carried out. Since then, several parties (in East Africa and other regions) have been involved in sea freight projects. Some were more experimental in nature, while other projects have resulted in more or less regular shipment routes. Still, the development of sea freight in East Africa as an alternative for airfreight seems to have stalled, while the number of sea freight shipments from Colombia appear to be in the hundreds (thousands?) of containers per year. The objective of an update of the sea freight studies is therefore to identify if and how the development of sea freight can be stimulated. What developments have taken place since those last studies, what has been accomplished and what can we learn from these?

3. Packaging improvement for the Kenyan flower industry

Design packaging models that are applicable throughout the entire supply chain, from grower to retailer/florist. There have been initiatives to improve packaging in the Kenyan flower industry, for instance by the Holland Flower Alliance. The project should also address the need for increased environmental awareness with respect to the amounts of packaging/plastics used in the flower supply chain.

Projects 2 and 3 can be integrated with the Kenyan Logistical Competiveness Study.

4. Benchmark of the Dutch supply chain performance

During the interviews we noticed that there was a lot of attention for the performance of the Kenyan supply side. There were however a number of issues mentioned on the Dutch side as well. In our opinion, it would be useful to obtain a better insight into the performance of the Dutch side, preferable as compared to the performance in other global supply chains. What can we learn from

practices and facilities in Miami, for instance? In the end, a Logistics Working Group/Task Force in the Netherlands could be useful.

5. Debate on the role of alternative airports for the flower industry

The Dutch government seems to be lacking a clear strategy with respect to the future role of alternative airports such as Maastricht and Liege for the flower industry and potential infrastructure development in AMS and/or MST. Should Maastricht grow into a leading flower receiving airport (like Lelystad for tourist flights) or should government policies be aiming for Schiphol as the main hub? Does the Dutch government want Liege to become the "second Dutch cargo airport"? What will the Dutch flower hub of the future look like and where will it be?

ANNEXES

A.1 Terms and Definitions

The following definitions apply:

ACN	Air Cargo the Netherlands
AFKLM	Air France-KLM
AMS	Amsterdam Airport Schiphol (IATA-code)
ASA	Air Service Agreement
ATA	Air Transport Agreement
ATM	Air Traffic Movement
BRU	Brussels Airport
FRA	Frankfurt Airport
FTK	Freight Tonne Kilometres
HFA	Holland Flower Alliance
IZM	Izmir Airport
KSA	Kingdom of Saudi Arabia
LGG	Liège Airport (IATA-code)
MST	Maastricht Aachen Airport (IATA-code)
NBO	Jomo Kenyatta International Airport (IATA-code)
PAX	Passenger
RFH	Royal FloraHolland
RTK	Revenue Tonne Kilometers
SPL	Amsterdam Airport Schiphol (former IATA-code)
TK	Turkish Airlines
VAT	Value Added Tax

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