

# Humanitarian Supply Chain in East Africa

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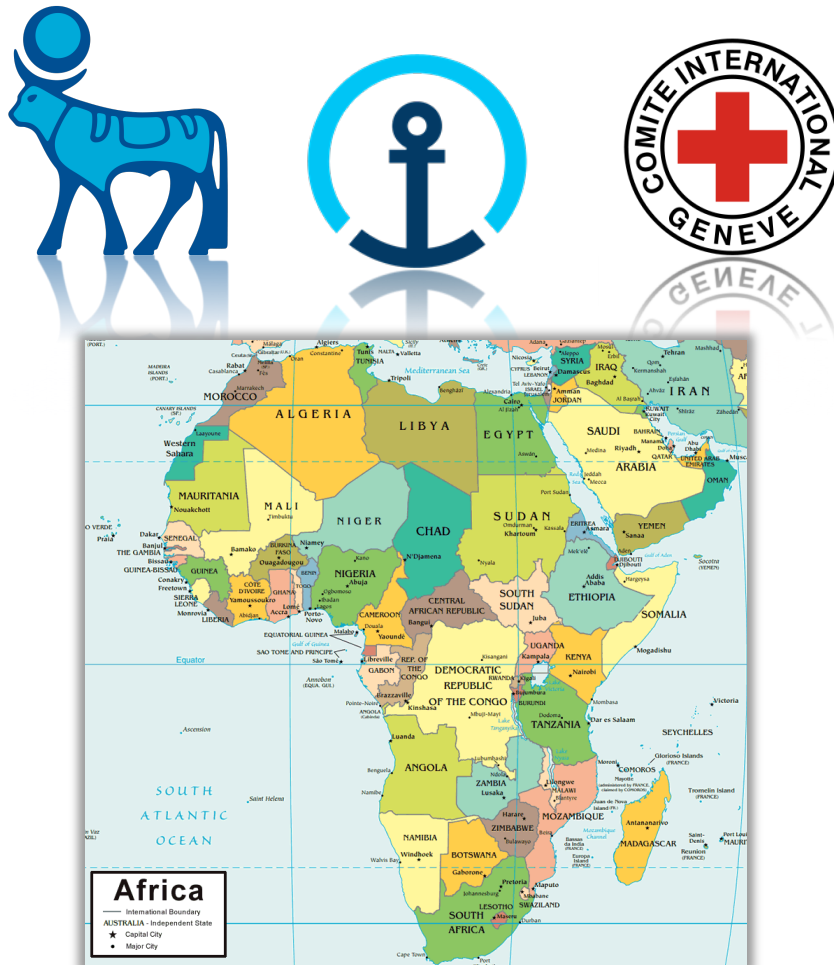
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## Table of Contents

<b>1. Abstract.....</b>	<b>5</b>
<b>2. Introduction.....</b>	<b>6</b>
2.1 Problem Statement .....	6
2.2 Research questions .....	7
2.3 Delimitations.....	7
2.4 Definitions.....	8
2.5 Disposition .....	8
2.6 Disclaimer .....	8
<b>3. Method.....</b>	<b>9</b>
<b>3.1 Research design.....</b>	<b>10</b>
3.1.1 Simple mixed methods.....	10
3.1.2 Case Study .....	11
<b>3.2 Data collection .....</b>	<b>11</b>
3.2.1 Secondary data.....	11
3.2.2 Primary data.....	13
<b>3.3 Analysis design .....</b>	<b>16</b>
3.3.1 PESTEL Model.....	17
3.3.2 Hofstede 6-D Model on Cultural Differences.....	18
<b>3.4 Data analysis.....</b>	<b>19</b>
3.4.1 SWOT – Opportunities and threats .....	19
<b>3.5 Validity, Reliability &amp; Replicable.....</b>	<b>19</b>
3.5.1 Validity.....	20
3.5.2 Reliability and replication .....	21
<b>4. Literature review .....</b>	<b>21</b>
4.1 Search overview .....	21
4.2 Review of literature .....	23
<b>5. Theoretical framework.....</b>	<b>28</b>
<b>5.1 Strategic .....</b>	<b>29</b>
5.1.1 Buyer-supplier relationships .....	30
5.1.2 Classifying material requirements .....	31
5.1.3 Out-come driven supply chains .....	32

<b>5.2 Structure .....</b>	<b>33</b>
5.2.1 Efficiency (Lean) vs. Responsiveness (Agile).....	33
5.2.2 Humanitarian supply chains (Decoupling point(s)) .....	34
<b>5.3 Drivers .....</b>	<b>35</b>
5.3.1 Logistical drivers .....	36
5.3.2 Cross-functional drivers.....	37
<b>6. Analysis .....</b>	<b>37</b>
<b>6.1 Novo Nordisk.....</b>	<b>37</b>
<b>6.2 Current state in East Africa - Novo Nordisk .....</b>	<b>39</b>
<b>6.3 PESTEL.....</b>	<b>39</b>
6.3.1 Political .....	39
6.3.2 Economic.....	43
6.3.3 Social.....	45
6.3.4 Technology.....	46
6.3.5 Environment .....	47
6.3.6 Legal.....	47
<b>6.4 Hofstede insights on East Africa .....</b>	<b>48</b>
<b>6.5 Strategic - New sustainable Partnership solution with Red Cross .....</b>	<b>51</b>
6.5.1 Relationship Management.....	51
6.5.2 Supply chain outcomes.....	54
<b>6.6 Structure .....</b>	<b>56</b>
6.6.1 Supply Chain network.....	56
6.6.2 Decoupling point .....	57
6.6.3 Swim lane process map .....	58
6.6.4 Kenya Ministry of Health .....	61
<b>6.7 Drivers .....</b>	<b>62</b>
6.7.1 Opportunities and Threats.....	63
6.7.2 Facilities .....	64
6.7.3 Inventory .....	65
6.7.4 Transport.....	66
6.7.5 Information.....	69
6.7.6 Sourcing.....	69
6.7.7 Pricing .....	70
<b>6.8 Implementation plan .....</b>	<b>70</b>

<b>6.9 Discussion .....</b>	<b>71</b>
<b>7. Conclusion .....</b>	<b>71</b>
<b>8. Outlook.....</b>	<b>73</b>
<b>Literature list.....</b>	<b>74</b>
<b>Appendix .....</b>	<b>81</b>
<b>Appendix 1 - Difference between Type 1 &amp; Type 2-Diabetes.....</b>	<b>82</b>
<b>Appendix 2 - Political stability index .....</b>	<b>83</b>
<b>Appendix 3 - Pictures from ICRC Geneva, Switzerland .....</b>	<b>84</b>
<b>Appendix 4 - Human insulin packing configuration .....</b>	<b>85</b>
<b>Appendix 5 - Kuehne + Nagel 4PL.....</b>	<b>86</b>
<b>Appendix: Meeting with Andre Harboe (Kuehne + Nagel).....</b>	<b>86</b>
<b>Appendix: E-mail questions with Rasmus Kastberg (Kuehne + Nagel) .....</b>	<b>88</b>
<b>Appendix: E-mail questions with Clause Hede Jensen (Novo Nordisk) .....</b>	<b>88</b>
<b>Appendix: Summary from Workshop at ICRC Geneva.....</b>	<b>90</b>
<b>Appendix: Meeting with Jane Rasmussen (Novo Nordisk) .....</b>	<b>94</b>
<b>Appendix: Meeting with Casper Pedersen (Kuehne + Nagel) .....</b>	<b>95</b>
<b>Appendix: Meeting with Mikkel Bøtcher (Kuehne + Nagel) .....</b>	<b>97</b>
<b>Appendix: Telephone meeting with Henrik Petersen (Danish Embassy in Kenya) .....</b>	<b>98</b>
<b>Appendix: Skype meeting with Ulrik Nielsen (Novo Nordisk).....</b>	<b>101</b>
<b>Appendix: Telephone meeting with Tariq Arain (Kuehne + Nagel) .....</b>	<b>103</b>
<b>Appendix: E-mail from Jane Rasmussen (Novo Nordisk) .....</b>	<b>106</b>
<b>Appendix: E-mail from Montse (Novo Nordisk) .....</b>	<b>107</b>
<b>Appendix: E-mail questions with Ruben Artal (ICRC) .....</b>	<b>109</b>
<b>Appendix: Telephone meeting with Mohammed Wehib (ICRC) .....</b>	<b>110</b>
<b>Appendix: Skype meeting with Jenny Chong (Novo Nordisk).....</b>	<b>112</b>
<b>Appendix: Telephone meeting with Hanne Strandgaard (WDF) .....</b>	<b>113</b>
<b>Appendix: Telephone meeting with Samuel Hailu (ICRC).....</b>	<b>114</b>

## 1. Abstract

**Purpose:** Novo Nordisk is trying to make human insulin more accessible and affordable to people in extreme poverty. Novo Nordisk wants to establish new supply chains in the East-Africa through a partnership with International Committee of the Red Cross. The purpose of this paper is to highlight the supply chain theory together with an empirical research on practitioners' viewpoint. Hopefully the paper will give a better understanding on supply chain strategy in East Africa.

**Approach:** The study is based on primary data collection from interviews, supplemented with secondary data collected online. 17 meetings included in the study and one of them was a workshop at International Committee of the Red Cross in Geneva to discuss future collaboration.

**Findings:** From a supply chain management view looking at East Africa and humanitarian supply chains; these are mainly based on high demand uncertainty. The theoretical and empirical research suggests responsive supply chain and strategic inventory postponement as far downstream as possible. Information sharing is one of the key tools when operating a responsive supply chain.

**Originality:** The paper provides empirical data specific to a case brought up by Novo Nordisk. The study is very focused on East Africa and humanitarian supply chain management to aid understanding in a specific case.

**Implications:** As the number of participants in the empirical data, limited the study in order to have a more groundbreaking conclusion; it requires a boarder collection of primary data.

**Keywords:** Supply chain management, Human insulin, Diabetes, East Africa, third world, Humanitarian supply chain, logistics, strategy, structure, drivers, Novo Nordisk, International Committee of the Red Cross, Partnership, Kuehne + Nagel, Case study

## 2. Introduction

Non-communicable diseases such as diabetes are becoming a bigger problem over time for many populations in the world. Especially countries in East Africa have some of the fastest growing populations with many people living in extreme poverty.

The insulin medicine exists globally to treat diabetes, even in the poorest settings. But today there are a lot of people living with diabetes who cannot get the life-saving insulin that they need – because it is too costly alongside other necessities in life, or in some parts of the world it isn't on the shelves when it is needed.

As the world's biggest producer of insulin for diabetes, Novo Nordisk stand on the frontline of the challenge of bringing diabetes medicine that is both affordable and available all over the world. It's the ambition of Novo Nordisk that everyone who needs essential diabetes medicines can access them, at prices that they can afford.

The challenge is to get the medicine to those who need it, with reliability, with high service level, and at a price they can afford or donated by charity.

A supply chain-partnership with the International Committee of the Red Cross and the Danish Red Cross, Novo Nordisk want to tackle the growing need to improve the treatment of chronic diseases, expand their efforts and creating solutions to help people access the diabetes care in East-Africa.

The following problem statement asks the questions on how Novo Nordisk should proceed in East Africa from a supply chain management perspective.

### 2.1 Problem Statement

Novo Nordisk is trying to make human insulin more accessible and affordable to people in extreme poverty. Novo Nordisk wants to establish new supply chains in the East-Africa through a partnership with International Committee of the Red Cross (ICRC).

- What supply chain strategy should Novo Nordisk use in East Africa?
- Which drivers are needed for Novo Nordisk in order to reach the performance level in East Africa?

## 2.2 Research questions

The research questions are based on the problem statement, and elaborate on the different perspectives of the problem.

1. What should be the supply chain strategy for Novo Nordisk and Red Cross in East Africa?
2. What should be the supply chain structure?
3. What are the opportunities and threats from a Supply Chain Management perspective in East-Africa?
4. How does International Committee of the Red Cross (ICRC) operate in East-Africa?
5. Which drivers are needed for Novo Nordisk in order to reach the performance level in East Africa?
6. How do they implement the new supply chain strategy?

## 2.3 Delimitations

The model below illustrates delimitation. The project will focus on insulin products – mainly human insulin for humanitarian purpose, together with the partnership between Novo Nordisk and International Red Cross. The scope is geographically narrowed to the Eastern region of Africa. The analysis part will point out some of the similarities in this region. The paper focuses on a small handful of countries in the East-Africa picked by the degree of material available – further mentioned in the method section. A definition of a humanitarian setting will be shown in the next section.

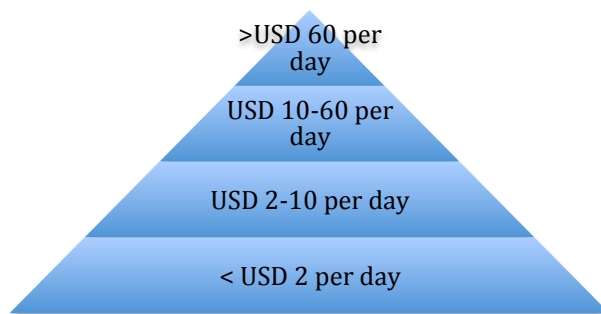


## 2.4 Definitions

Human insulin is an insulin-product from Novo Nordisk branded as Mixtard (European Medicines Agency, 2009). Human insulin is the most basic form of insulin. A patient with Type 1-diabetes the body cannot produce any insulin and that means the daily injection with insulin is necessary to stay alive. A patient with Type 2-diabetes the body cannot create enough insulin or do not react to insulin, and that means extra insulin from injection is needed to stay healthy. See a simple illustration of the difference between Type 1 vs. Type 2 - appendix 1.

There are a few definitions about which countries are included in East-Africa. United Nations has 20 countries/territories named in the Eastern Africa. (Wiki, 2019)

A Humanitarian Setting is defined as people caught in conflict areas or living in extreme poverty that makes it impossible to afford or get access to the most essential care and medicine. These people are at the bottom of the economic pyramid:



(Novo Nordisk & United Nations, Reaching the base of the pyramid, 2016)

## 2.5 Disposition

The paper is structured as: first section the method of research and what challenges was encountered during the research. Second will be a review of the literature used and arguments for the relevance. The literature review will lead to third section that explains the overall theoretical framework for this project. The fourth section is the analysis where theory and data collection comes together and presenting the findings of the study. Finally the conclusion in last section will sum up the entire project.

## 2.6 Disclaimer

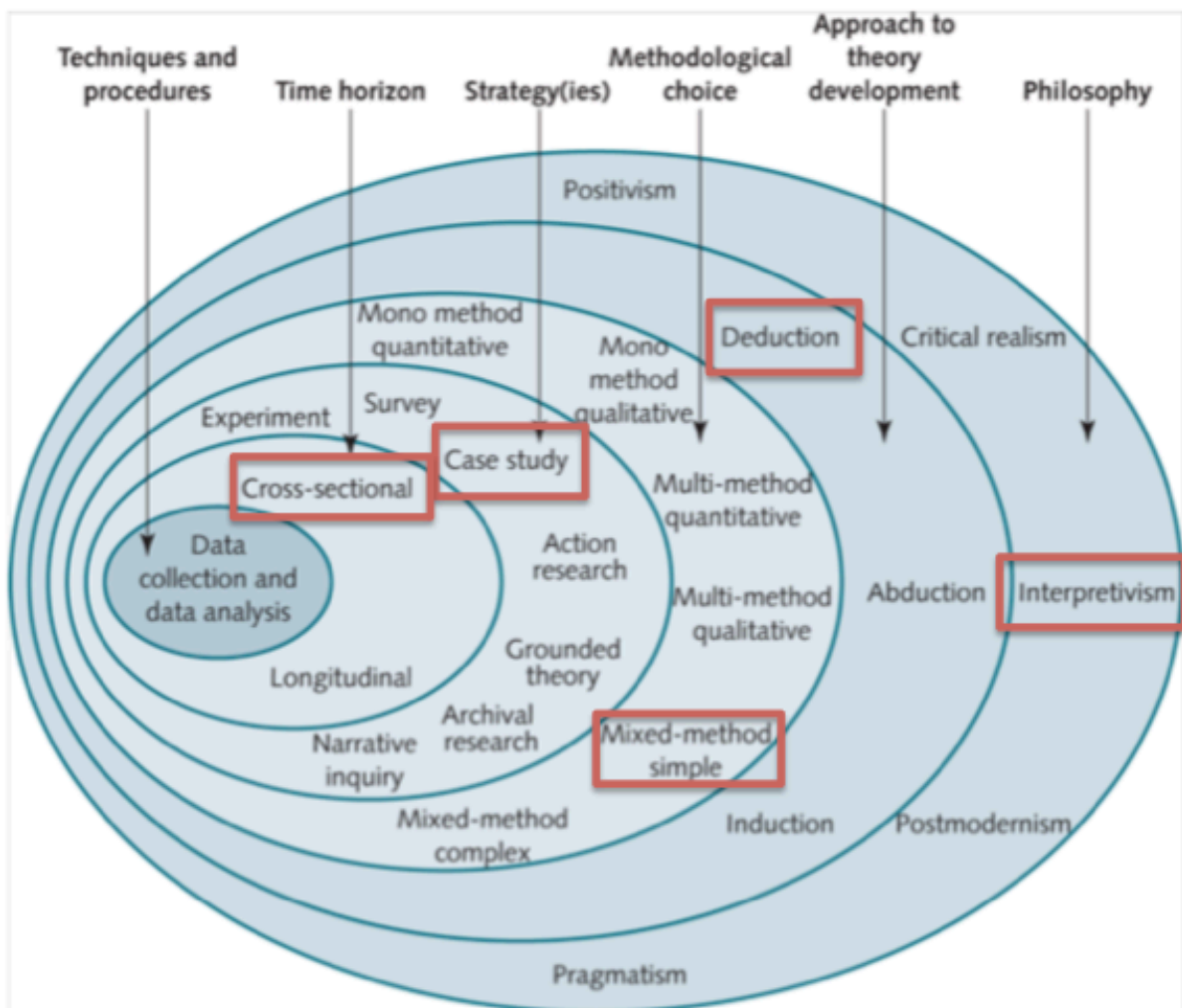
The paper is lacking prices and figures from Novo Nordisk due to confidentially reasons. Even though with the CBS confidentially agreement it was simply not allowed by Novo to include prices and internal

figures. Values included in this paper were already available to the public online or from meetings that was not confidential.

### 3. Method

According to the book (Saunders, Lewis, & Thornhill, 2016) on research methods there are a few research philosophies. Going into this research with the belief that facts was “out there” to be discovered, but these facts would come from subjective views. The perception is that theories are too simplistic and it is worth capturing narratives, stories, perceptions and interpretations.

Figure: The Research Onion

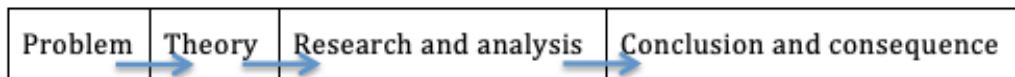


(Saunders, Lewis, & Thornhill, 2016)

In the picture above is pointed out what kind of path was chosen for this project. The project is favoured by interpretivism. *Interpretivism emphasises that humans are different from physical*

*phenomena because they create meanings*. The purpose is to create a paper with new rich knowledge and understanding of the topic. It is possible to find written material on the topic, but the quantity is still small. Therefore much of the knowledge is still captured in people working and living in the area of research. It is interesting to conduct this kind of research, because the point of view can differ from individuals.

The approach is called deductive. The idea is to explore a phenomenon and with guidance from theory to create a meaningful conclusion. Hopefully this paper will give Novo Nordisk a better picture in which field they are trying to manoeuvre. The purpose with this research is to contribute with new understandings within the topic. The deductive assumption is when the premises are true; the conclusion must also be true.



In a deductive approach you work from a view that is your problem, you seek to find theory that can aid assistance to the problem and through analysis draw conclusions that is helpful in solving the problem. In this particular study, the problem was recognized by Novo Nordisk to initiate the research in hope for a better overview of the field.

### 3.1 Research design

The following section will include methods and plans throughout the project. The study favoured a mixed method approach.

#### 3.1.1 Simple mixed methods

The mixed methods approach included a blend of primary and secondary data. The primary data consists mainly of qualitative data from meetings and interviews. Studying an unfamiliar geographical region it was important for the research to gather qualitative data from experts and people working in the field. The secondary data is a mix of qualitative and quantitative data from databases, articles, websites, etc. The secondary data gives a good background in the field.

### 3.1.2 Case Study

The choice of research strategy is the case study. It was clear from the beginning case study was the right path to go – imagining to explore a case where theory could support the reality or the reality to challenge the theory. This strategy allows in-depth study of one or more phenomenon or subjects of investigation against a wide range of variables. It can be an individual, a group or an organization that is the subject of the study. The case study allows many different sources of information to cover the phenomenon, as well as you can have a mix of both primary and secondary data.

### 3.2 Data collection

The process of collecting data has been scattered across the whole timeframe of the project. The search for theory and secondary data was mostly done on the early stage, but also followed up during the project. An extensive search through databases was made to find country comparison data in order to draw a view of the region in question. The primary data being interviews was difficult to schedule on beforehand, some of the meetings was planned as soon as possible. The timetable was the starting point for the project, not all tasks was done as intended, but the table was a floating document adapting as the project progressed.

**Table: Timetable of entire project**

Week	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Table of contents																		
Executive summary																		
Introduction																		
Problem formulation																		
Literature review																		
Theory / Framework																		
Methodology																		
Analysis																		
Conclusion																		
Literature list																		
Appendices																		
Interviews/meetings																		

#### 3.2.1 Secondary data

Sampling of secondary data has been limited to the amount of availability online. Countries that were predominantly in focus are: Kenya and Ethiopia. Other countries such as Tanzania, Somalia, Uganda, South Sudan, Rwanda and Malawi are part of the data collection to a smaller degree, to draw similarities and due to amount of data available. These countries to some extent was randomly

selected when other countries in East-Africa are not included. It was a simple evaluation of how much data that was easy accessible.

### **3.2.1.1 various databases, articles, websites**

A lot of hours were consumed in the search for data about East Africa. The search included a lot of databases and websites in order to learn more about the region. Some of the main and trusted databases in use are displayed in the below table. In the search for theoretical papers, Emerald Insight and Business source complete were the preferred choice as these are widely recommended. The databases contains a lot of different academic papers and it can be difficult to narrow down the search – to find something specific for this topic. It is important to know the tricks on how to search with keywords and other advanced options.

In search of articles and finding websites with relevant content was mainly done by Google. To some extend Wikipedia was used to help clarifying technical terms. Wikipedia is not always recognised to be the trustworthiest source of information and it is important to be critical and check the references.

### **3.2.1.2 Database overview**

<b><u>Database:</u></b>	<b><u>Type:</u></b>
<b>CIA – The World Factbook</b>	Country data
<b>The Economist Intelligence unit</b>	Detailed country fact sheets
<b>MarketLine</b>	Global analysis database on markets, countries, companies, etc.
<b>EMIS Professional</b>	Emerging markets information database, Insulin market overview
<b>Emerald Insight</b>	Academic articles, Theoretical papers
<b>ProQuest EBook Central</b>	Saunders research methods book, Supply chain management book
<b>EBSCO Host databases</b>	Various databases i.e. Business source complete
<b>The World Bank Data</b>	Country economical data, Development indicators, Logistics Indicator
<b>OECD Library</b>	Country reports and other in-depth reports

### 3.2.2 Primary data

The collection of primary data has been uniquely from interviews. With the form of interviews the purpose was to capture the experiences and narratives from the people working in the field. In order to learn more about some of the challenges currently in East Africa, but also to have some expert perspectives in supply chain management. The interviews and meetings were held throughout the entire period of the project.

There was only a very few unstructured interviews and focus group meetings, other than that the main type of method was semi-structured interviews. The form of interviews was a blend of all – face to face, telephone conversations, Internet mediated such as Skype, and E-mail. Technology makes it more convenient to perform interviews. The interview form is a very purposeful conversation between two or more people, normally led by the interviewer to ask reasonable questions in which the interviewee is willing to respond. It can sometimes be difficult to prepare before an interview if the questions are too simple or too ambiguous. If the questions are too ambiguous the interviewee might not know the answer, but many times the interviewee might be helpful in showing the direction in where to find the answers.

All interviews and meetings have been put down in writing as summaries – these can be seen in the appendix section.

**Table: Meeting overview from the entire project**

<b><u>Type of meeting:</u></b>	<b><u>Participants:</u></b>	<b><u>Time:</u></b>	<b><u>Location:</u></b>
Resource clarification from participants	Jane Rasmussen, Jesper Julius Christensen, Jette Rune Jørgensen, Montserrat Ugalde Huebe, Claus Hede Jensen (all Novo Nordisk)	Week 50 14-12-2018	Novo Nordisk Bagsværd, DK
Subject of the problem definition	Jane Rasmussen, Jesper Julius Christensen (all Novo Nordisk)	Week 51 17-12-2018	Novo Nordisk Bagsværd, DK
Project General questions	Claus Hede Jensen (Novo Nordisk)	Week 5	E-mail
Kuehne+Nagel – Unstructured interview	André Harboe & Claus Lindebjerg (all K+N)	Week 5 01-02-2019	Kuehne+Nagel, Taastrup, DK

Kuehne+Nagel – Working with ICRC General questions	Rasmus Kastberg (K+N)	Week 6	E-mail
ICRC + Novo Nordisk Workshop – Focus group	Rudina Turhani, Ruben Naval Artal, Sandrine Papazian, Rana El Baba, Hind, Mirko, Stephanie, Thierry Fournier, Didier (all ICRC). Mia, Montserrat, Claus Jensen, Jesper Julius (all Novo Nordisk). Claus Lindebjerg (K+N)	Week 7 12-02-2019	ICRC Branch Geneva, CH
Meeting at Novo Nordisk – discussing project details	Jane Rasmussen, Montserrat, Claus Hede Jensen (all Novo Nordisk). Claus L. (K+N)	Week 9 01-03-2019	Novo Nordisk Bagsværd, DK
Kuehne+Nagel – Semi-structured interview	Casper Jonas Pedersen & Claus Lindebjerg (all K+N)	Week 11 11-03-2019	Kuehne+Nagel, Taastrup, DK
Danish Embassy Kenya – Semi-structured interview	Henrik Petersen (Nairobi) & Claus Lindebjerg (K+N)	Week 11 13-03-2019	Telephone
Kuehne+Nagel – Semi-structured interview	Mikkel Bøtcher & Claus Lindebjerg (all K+N)	Week 11 14-03-2019	Kuehne+Nagel, Kastrup, DK
Novo Nordisk – Semi-structured interview	Ulrik Uldall Nielsen, Montserrat (all Novo Nordisk) & Claus Lindebjerg (K+N)	Week 12 20-03-2019	Skype
Kuehne+Nagel – Semi-structured interview	Tariq Arain (K+N Nairobi) & Claus Lindebjerg (K+N)	Week 12 22-03-2019	Telephone
ICRC – Semi-structured interview	Wehib Mohammed (ICRC Kenya) & Claus Lindebjerg (K+N)	Week 14 01-04-2019	Skype
ICRC – detailed questions	Ruben Naval Artal (ICRC HQ)	Week 14	E-mail
WDF – Semi-structured interview	Hanne Strandgaard (WDF) & Claus Lindebjerg (K+N)	Week 15 09-04-2019	Telephone
Novo Nordisk – Semi-structured interview	Jenny Chong (Novo Nordisk) & Claus Lindebjerg (K+N)	Week 15 09-04-2019	Telephone

ICRC – Semi-structured interview	Samuel Hailu (ICRC Ethiopia) & Claus Lindebjerg (K+N)	Week 16 17-04-2019	Telephone
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### *3.2.2.1 Unstructured interviews*

Early stages in the project were mainly favoured by unstructured interviews to explore more about the topic. These interviews are informal and give the interviewee the opportunity to speak freely. There is not necessarily any prepared questions before the meeting, but at least a predetermined topic area.

First meetings at Novo Nordisk was set out to explore the problem area and to align expectations about the project in general, but also in collaboration to define a specific problem definition. Next meetings was held at Kuehne + Nagel to explore some of the knowledge in the network and get possession of new contacts that could give valuable information to the project.

### *3.2.2.2 Semi-structured interviews*

Formal socially constructed semi-structured interviews have been the favourite choice. The method is easy to use and makes it possible to conduct information to explore or explain the topic area. The semi-structured interviews are mainly used for explanatory and evaluative studies, but also to a smaller degree for exploratory studies. In this explanatory study the interviews are used to explain how to put the theory into practice and what challenges can occur in doing so. The interviews can also be used to create links between some of the secondary and primary data – giving great first-hand experience that might verify the secondary data.

Before every meeting preparations were done very carefully. The method was to bring an interview guide to all the meetings with questions and keywords. The keywords were to use in order to keep interviewee on the right track and not to spiral into conversation that was not relevant for the topic. The course of the actual meetings was considered on beforehand, how to establish the right atmosphere and relationship with the interviewee. The procedure was:

1. Start with casual conversation: about weather, work, personal small talk
2. Give a brief introduction to the project, so the interviewee knows some of the background that led to the interview in the first place
3. Have a brief introduction about the interviewee and what position he/her works in
4. Then start out with the questions guide

5. Cover as many questions as possible, maybe add some questions depending on how the conversation develops
6. Finally summarize some of the important findings in the conversation, and show gratitude for the participation

It is really important to create a social friendly atmosphere so that the interviewee feel valued in the information whom is sharing – not to pressure on with the questions to look like a cross-examination. It was difficult sometimes to keep the interviewee on track at all times, but it was not a problem in general. The questions guide and keywords made it easy to steer the conversation in the right direction.

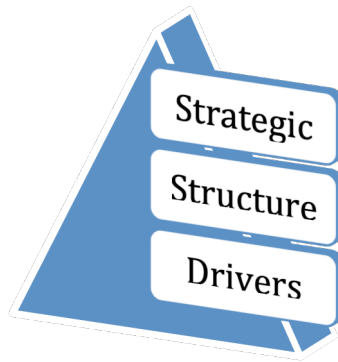
### **3.2.2.3 Focus groups & Group interviews**

Semi-structured interviews can also be done in groups. It simply means that you have two or more participants, but the procedure would look like a semi-structured interview. It is important to define a clear and precise topic for an interactive discussion. Same as in the face-to-face meetings preparation was done on beforehand in form of a questions guide. The guide helps to have questions ready and keeping the interviewees within the topic area.

Novo Nordisk and ICRC had organised a workshop to enhance collaboration between the two organisations, and it was made possible to gather data from this meeting. The workshop can be considered as a focus group because the number of participants was between 4-14 people. The focus group was assembled towards a clear purposeful topic in doing business together. Some of the discussions were very intriguing in regards to this project.

## **3.3 Analysis design**

The analysis section will have a top-down perspective as the model shows – looking at strategic parts moving down to the structure of the supply chain and lastly looking into some of the drivers. These three steps will be described more in detail in the theoretical framework. The theoretical framework model is used to structure the analysis. The PESTEL model and Hofstede model on cultural difference will be used as support data to give some insight about the macroeconomics and demographics in East Africa.



### 3.3.1 PESTEL Model

PESTEL Model is a good tool in outlining some the industry issues inside a market or country. The PESTEL can be rather unstructured and unranked identification of the key issues, but in this case it is used to give the right foundation of information for the reader (Evans, 2013).

<b>P</b> olitical	Government taxation, legal and regulatory intervention in the market or country. Can also include figures from the Global Corruption Index.
<b>E</b> conomic	The macro-economic backdrop, including economic growth, but can also includes inflation, interest rates and exchange rates if relevant. Can also include analysis on the Logistics Performance index.
<b>S</b> ocial	The societal backdrop, including population trends, consumption/demand patterns, age distribution, etc.
<b>T</b> echnological	Trends in innovation that can affect the product line, for instance substitute products. Also growth in technology within the market or country.
<b>E</b> nvironment	Trends in weather and climate, and the impact of climate change in your firm's operations and customer preference.
<b>L</b> egal	Trends in laws which impact on a firm's operations and decision making, including employment, health/safety/environment, antitrust, consumer protection, capital adequacy and governance laws.

### 3.3.2 Hofstede 6-D Model on Cultural Differences

By analysing the cultural differences in a multinational company, Geert Hofstede, developed his model for assessing 12 different aspects on culture in a business context. By grouping these terms two and two against each other (Hofstede, Cultural Dimensions In Management And Planning, 1984) and applying a measurement between the two extremes, Hofstede could place values on a country's preference in regards to certain cultural dimensions of business life. The 6 dimensions are described in table.

**Table: Extract from Hofstede Insights (Hofstede, Country Comparison)**

<b>Large Power distance vs. Small Power Distance</b>	The extent to which the less powerful members of institutions and organisations within a country expect and accept that power is distributed unequally
<b>Individualism vs. Collectivism</b>	The degree of interdependence a society maintains among its members
<b>Masculinity vs. Femininity</b>	The fundamental issue here is what motivates people, wanting to be the best (Masculine) or liking what you do (Feminine)
<b>Strong Uncertainty Avoidance vs. Weak Uncertainty Avoidance</b>	The extent to which the members of a culture feel threatened by ambiguous or unknown situations and have created beliefs and institutions that try to avoid these
<b>Long Term Orientation vs. Short Term Orientation</b>	How every society has to maintain some links with its own past while dealing with the challenges of the present and future
<b>Indulgence vs. Restraint</b>	The extent to which people try to control their desires and impulses

The tool allows graphical support as well as country specific description of any cultural specifics that the authors of this online tool have registered. According to (Kim, 2015) this model have some pros and cons:

- Easy tool to use to understand different cultures.
- Gives an overview of differences in attitude and behaviour when doing business in a foreign culture.
- Hofstede models are still relevant in today, because cultures change very little and slow.
- Other researches have questioned whether the model is accurate.
- Some say the model is out-dated and not sufficient with only 6 dimensions.
- Take into consideration that this model defines a culture as a whole, not individuals.

### 3.4 Data analysis

The qualitative data collected in this project will be analysed through a deductive approach. This means that the theory will direct the data analysis, but the theoretical framework itself might be too restricted alone. Therefore the choice was to combine parts of the SWOT model together with the drivers from the framework.

#### 3.4.1 SWOT – Opportunities and threats

The SWOT model consists of four dimensions: Strength, weaknesses, opportunities and threats. This model is normally used to outline the four dimensions from a company's perspective. The tool is good for structuring the brainstorming of issues related to a firm or market – in order to follow up with additional analysis. The best is not to dump too many brainstorming points in each box; otherwise the matrix is too fluffy. (Evans, 2013)

In this particular analysis only two of the dimensions will be in use: opportunities and threats. It is not relevant to look at strengths and weaknesses relative to Novo Nordisk, as this would be an entire different analysis.

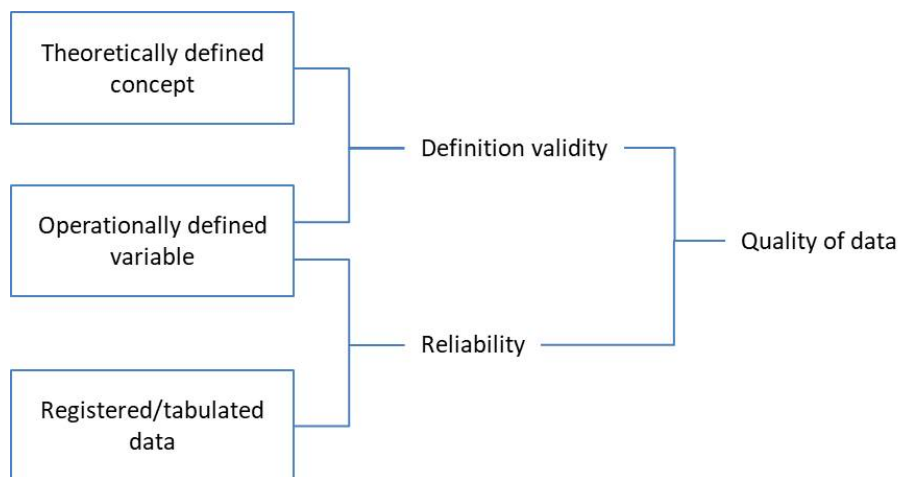
To display opportunities and threats against the drivers from the framework is done with a 6 by 2 Table model – this is shown in the analysis section. This gives an overview of the opportunities and threats in the different areas.

### 3.5 Validity, Reliability & Replicable

This project relies very much on qualitative data collected from various sources in and outside of Novo Nordisk. It is beyond debate that validity and reliability is a corner stone in any article or paper. However there are some notes in regards to the relevance of reliability and validity for qualitative

research (Bryman & Bell, 2015). In this report the assumption is that there is relevance for validity. Because validity tells something about the consistency between theory and data on a conceptual level, and further more if the data are relevant towards the problem statement (Andersen, 2014). Reliability dictates how precise and reliable measuring the thing that was initially set to measure, and to a certain degree, if the methods are influenced by random acts of chance (Andersen, 2014). Below figure shows the relationship between validity and reliability (Hellevik, 2002).

**Figure: Relationship between reliability and validity (Hellevik, 2002)**



### 3.5.1 Validity

In regards to the collected data, only stakeholders with relevance to the problem definition, geographical presence or first-hand knowledge to specific areas of interest have been selected for interviews. The questions have been constructed to gain specific knowledge about the subject. Many of the questions had to be directed in a broader perspective, as to obtain as much knowledge possible. The interviewees have been informed on forehand that the project was only for educational purposes, and that all suggestions would have no business impact on the daily work, besides for the time taken out of a busy schedule.

Initial learning about the problem from the presentation in December 2018 at Novo Nordisk, all the stakeholders we have encountered have acknowledged the struggle to establish or withstand an agile supply chain in the given setting. The problem is recognized in Novo Nordisk and been supported both by primary and secondary data, the general assumption is that the interviewees have little reason to give false information. The assumption is therefore that the data collected is valid.

### 3.5.2 Reliability and replication

Reliability is about how exact and precise to measure (Andersen, 2014), and if the same investigation, or in this case, questions should be given again to similar interviewees, would give the same result. Completely free from interpretation is not entirely possible, especially since the interviews have been done via Skype calls and in a foreign language.

The assumption is still that the data collected is reliable, and if gathered again, also with other stakeholders in similar position, would yield the same result, thereby being replicable.

## 4. Literature review

This section provides an overview of the theoretical literature used in this project. Other models such as PESTEL, Hofstede 6-D Model on cultural differences – will help to create basis knowledge in the analysis. In this research the goal was to find literature written with an eye for; humanitarian supply chains and supply chains in third world countries such as East Africa.

### 4.1 Search overview

For searching literature the main use of databases was Emerald insight, EBSCO Host and EMIS Professional also shown back in the method section. These sources contain a lot of different literature on Supply Chain Management, but it was difficult to find literature very specific for this paper. The initial pool of literature was too comprehensive and with rough sorting, a lot of literature was cut out. The below table became the preferred literature for this paper.

**Table: Overview of literature narrowed down to preferred selection.**

<b><u>Search question:</u></b>	<b><u>DB:</u></b>	<b><u>Hits:</u></b>	<b><u>Title:</u></b>	<b><u>Authors:</u></b>	<b><u>Year:</u></b>
Red Cross, Kenya, Purchasing, Medicine	Emerald Insight	53	Performance measurement in humanitarian relief chains	Benita M. Beamon, Burcu Balcik	2008
Best practice relief supply Africa; Keyword: supply chain management	Emerald Insight	10	Building humanitarian supply chain relationships: lessons from leading practitioners	Ron McLachlin, Paul D. Larson	2011

Best practice relief supply Africa; Keyword: supply chain management	Emerald Insight	10	Improving health in developing countries: reducing complexity of drug supply chains	Marianne Jahre et al.	2012
Best practice relief supply Africa; Keyword: supply chain management	Emerald Insight	10	Delivering in a moving world...looking to our supply chains to meet the increasing scale, cost and complexity of humanitarian needs	Rebecca Lewin, Maria Besiou, Jean-Baptiste Lamarche, Stephen Cahill, Sara Guerrero-Garcia	2018
Collaboration in humanitarian supply chains	Emerald Insight	410	Humanitarian supply chain strategies – a review of how actors mitigate supply chain risks	Marianne Jahre	2017
Marianne Jahre	Emerald Insight	23	Theory development in humanitarian logistics: a framework and three case	Marianne Jahre, Leif-Magnus Jensen & Tore Listou	2009
Agile supply chain	Emerald Insight	3106	Humanitarian aid: an agile supply chain?	Richard Oloruntoba & Richard Gray	2006
Measuring agile capabilities in the supply chain	Emerald Insight	2004	Measuring agile capabilities in the supply chain	Martin Christopher et al.	2001
Supply chain migration from lean and functional to agile and customised	Emerald Insight	12	Supply chain migration from lean and functional to agile and customised	Martin Christopher	2000

The procedure was to start searching generic terms such as “Best practice relief supply Africa” to see how many hits and after that try to narrow down the search to a more tangible amount. While searching for humanitarian supply chains an author appeared in several articles “Marianne Jahre”, so the next natural step was to search more into this author to see if she has been part of other studies

in this field. But what was interesting to find was, that her work was cited in other papers and her work included some potential references to look into.

The list with literature found is sorted by time of discovery. The search initially started with looking for any literature about supply chain management in third world countries including humanitarian supply chains.

Throughout the search "Agile Supply chain" was commonly used in the context of humanitarian supply chains, and by coincidence the article called "Humanitarian aid: an agile supply chain?" showed up as a top hit on the page with more than 3000 hits. The last two papers in the table by Martin Christopher et al. was cited in "Humanitarian aid: an agile supply chain?"

## 4.2 Review of literature

Before going into the specific literature found above on humanitarian supply chains, it is worth mentioning some of the key elements in a supply chain. The book "Supply Chain Management: Strategy, Planning and operation" the authors (Chopra & Meindl, 2015) gives a great understanding of what must be considered in designing, planning and operating a supply chain. The book is framed upon a matrix that will be shown later in the theoretical framework section. What it basically does: is to look at the supply chain from top-down. Beginning with the competitive strategy that defines the company's core competencies and vision to beat the competitors in the market. This leads to the supply chain strategy, how to design the supply chain in order to fulfil the overall strategy. Further down is the supply chain structure is defined the balance between efficiency and responsiveness also known as lean vs. agile. On the basis of the supply chain strategy and structure, these will give the directions on how to manage the drivers. The drivers consist of logistical drivers and cross-functional drivers. The logistical drivers are: facilities, inventory and transportation. The cross-functional drivers are: information, sourcing and pricing. The book gives a great description on how to manage all these six drivers, with several examples on how other firms such as Amazon and Wal-Mart manage too.

When going into designing a supply chain strategy it is worthwhile to look at: buyer-supplier relationships by (Bensaou, 1999) and supply management by (Kraljic, 1983). Furthermore it is also important to understand the outcome need from the supply chain by (Melnik, Davis, Spekman, & Sandor, 2010).

(Bensaou, 1999) is talking about business relationships and how to manage them. The trend in modern time is that more corporations are forming long-term close relationships rather than arms-length relationships. The way he can distinguish between the different types is by: looking at buyer's specific investments and supplier's specific investments. With this he has created a matrix to show four types of relationships:

- Market exchange also known as arms-length,
- Captive buyer where the buyer has highest stakes involved,
- Captive supplier where it is the other way around, and last the
- Strategic partnership where both buyer-suppliers have high investments tied in the relationship.

*"Effective supply chain management requires choosing a type of relationship appropriate to the product and market conditions and adapting management practices to that relationship."* (Bensaou, 1999)

(Kraljic, 1983) is talking about supply strategy, but is a little bit related to the matrix from Bensaou. Kraljic is about the supply strategy that you have in your company and classifying the products that you purchase. He has divided the products into four categories:

- Noncritical items that is not important for the core business but need to be replenished systematic,
- Leverage items where you have the high buying power towards the suppliers,
- Bottleneck items is when the supply market is exhausted you must be careful about the suppliers,
- Strategic items that are important for the core business you develop close long-term supply relationships.

In more modern literature (Melnik, Davis, Spekman, & Sandor, 2010) are talking about, that traditionally supply chains were focused on cost, lead-time and quality. Now the supply chains are focusing more on several outcomes: cost, resilience, innovation, sustainability, security and responsiveness.

- Cost: reduce product costs, reduce lead-time and ensure timely reliable delivery
- Responsiveness: respond to fluctuations/changes in demand as quick as possible
- Security: ensure products are secure from external threats throughout the supply chain
- Sustainability: ensure controlled and minimal resource impact today and in the future
- Resilience: monitor and reduce supply chain risks and disruptions – react quickly
- Innovation: provide new ways of delivering, producing or disrupting products

The article on *Performance measurement in humanitarian relief chains* (Beamon & Balcik, 2008) talks about comparisons of humanitarian chains and commercial chains. As of humanitarian chains there are two types of activities:

- Relief activities for large-scale emergencies/disasters – short-term focus to provide goods and services in the need for survival.
- Development activities focusing on long-term aid helping communities to become self-sufficient and create sustainable solutions.

While comparing commercial chains with humanitarian chains the authors use three types of performance measures in comparison: resources, output and flexibility. Performance measurement is important in both worlds – commercial and humanitarian aid. The article gives some good examples on the differences.

Relationships in humanitarian supply chains come in many types. Nevertheless it is important to create good relationships humanitarian supply chains to secure better coordination and effectiveness for timely delivery of services to beneficiaries. The article by (McLachlin & Larson, 2011) outlines some of the narratives from leading practitioners on why relationships are important, but also what are some of the challenges and constraints. Most aid organisations are somewhat decentralized; this means you both have the internal relationships and external relationships to take care of. With better relationships in the entire supply chain as early as possible – a lot of obstacles can be overcome with increased information sharing.

The first paper found by Marianna Jahre in the search is about reducing complexity in drug supply chains in developing countries (Jahre, Dumoulin, Greenhalgh, Hudspeth, Limlim, & Spindler, 2012). She wrote the paper together with UNICEF in Uganda. She argues that reduced complexity in the supply chain can overcome shortage of products, better lead-times, and lower costs and less

uncertainty. Better integration between information and goods flow might reduce bottlenecks in the supply chain. In the article she outlines some of the problems with the supply chain in Uganda. And she also proposes a framework of initiatives/strategies to improve the performance. For instance keeping stock in a central location close to the demand, rather than having a decentralized stock can do this, because it gives better control of inventory and forecasting – in this part of the world.

Importance of humanitarian supply chain as the backbone of the humanitarian operations is outlined in the paper by (Lewin, Besiou, Lamarche, Cahill, & Guerrero-Garcia, 2018). They propose feasible ways to overcome some of the main supply chain challenges identified by practitioners to achieve cost efficient and effective operations. One interesting narrative in the paper was about: how the engagement from the private sector played a key partner in the Ebola outbreak. Furthermore it gave wonder how the humanitarian and private sector can benefit from each other. *“...we hope that the paper will inspire commitment from all humanitarian stakeholders to assist with improving the efficiency, cost effectiveness and agility of humanitarian supply chains, to the benefit of affected populations.”*

Marianne Jahre has been looking into secondary data on how humanitarian actors cope with risks. She argues that humanitarian actors use a number of the strategies, particularly strategic stocks, postponement, and collaboration. Strategies related to sourcing and procurement, however, especially those on supplier relationships seem to be lacking. (Jahre, Humanitarian supply chain strategies – a review of how actors mitigate supply chain risks , 2017) Strategic stocks are to be located in central locations close to demand and postponement relates to having equity ready in case of emergency but also having all basic items in stock with neutral packing. She found that a combination of postponement and strategic stocks improves the speed, cost, and quality of Red Cross response. She also found that many of the organisations use collaboration in coordination and cooperation with suppliers and rich information exchanges. To summarize the keywords from Jahre: postponement, strategic stocks and collaboration.

In another paper by Jahre, she tries to develop a framework for humanitarian logistics. *“This paper outlines theoretical and empirical starting points of a research project on humanitarian logistics (...) concepts of temporary vs. permanent networks, decentralization and centralization and vertical and horizontal coordination in this setting would be a fruitful avenue to pursue.”* (Jahre, Jensen, & Listou, Theory development in humanitarian logistics: a framework and three cases, 2009) They describe the theory of placing stock in strategic locations and postponement strategy. The article gives good

explanation of the different strategies and ideas how to use them. They describe four types of strategies in humanitarian logistics:

- Full speculation strategy: this is a mix of manufacturing and logistics speculation typically used for preparedness when you stock finished goods in decentralized locations
- Logistics postponement: this is when you have a centralized stock while investing in transportation and goods handling
- Manufacturing postponement: this is when you have semi-finished goods in decentralized locations prepared for assemble or packing against incoming needs
- Full postponement strategy: this is when you invest in suppliers to keep semi-finished goods while investing in transportation and goods handling

Most interesting in this article by (Oloruntoba & Gray, Humanitarian aid: an agile supply chain?, 2006) they argues the humanitarian supply chain can have a hybrid form of decoupling points. Basically they argue some of the same points as Jahre in regards to postponement and strategic inventory. The material flow of goods should be kept as far downstream as possible maintained in a generic form, but from the inventory decoupling point and upstream stay efficient/lean. The flow of information should go as far upstream as possible. Downstream activities and information systems should stay as agile and effective as possible to meet the needs of aid recipients. Even though inventory is kept far downstream it is still important to have efficient/lean upstream performance acceptable by donors.

Now that it is clear from a few articles, that agility is widely used in humanitarian supply chains, the article by (Hoek, Harrison, & Christopher, 2001) describes what agile is. *"Agility is all about creating that responsiveness and mastering the uncertainty. In that respect the agile mind-set is at variance with the lean production model that is commonly embraced in supply chain management."* In a theoretical view on agile supply chains these consists of four dimensions:

- Customer sensitivity includes market understanding and customer enrichment, such as customization, postponement and rapid response
- Virtual integration relates to leveraging information
- Process integration relates to mastering change and uncertainty, through managing the supply chain as a whole
- Network integration relates to cooperating to compete, and broad supply chain governance

Last but not least an article that distinguishes difference on lean vs. agile supply chains. (Christopher & Towill, 2000) Gives some good examples on lean and agile supply chains, but also what are the distinguishing attributes on both strategies. *“However the agile paradigm must be ‘nimble’ since sales lost are gone forever. (...) agile supply means reserving capacity to cope with volatile demand. (...) agile forecasting requires shared information on current demand captured as close to the marketplace as possible.”* They argue if the organisation carefully manages decoupling points, agile response can be created, and thus can reduce the “Bullwhip effect” (Forrester, 1961) through shared information and postponement. The article by (Lee, Padmanabhan, & Whang, 1997) also explains well the bullwhip effect and gives good initiatives on how to avoid it.

These articles were selected from a larger pool originally. The idea was to get a more close up look at some of the theory covering supply chain strategy and supply chain structure in regards to humanitarian supply chains. Especially interesting is the paradigm between lean vs. agile, but also how to manage decoupling points and where to place a strategic inventory. The literature covers the topic quite well and adds some ideas to it.

## 5. Theoretical framework

In the following section is shown the framework foundation for the analysis section. The model below shows the same pattern as mentioned in the method section – now including some of the theories selected from the literature review.


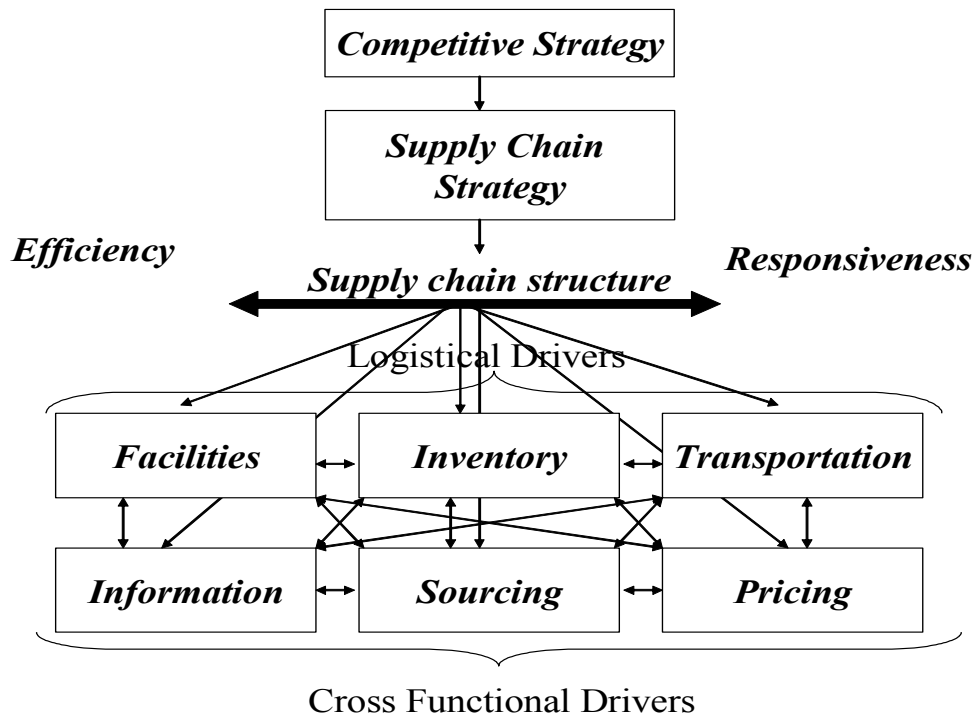
	Strategic	<ul style="list-style-type: none"> <li>•Buyer-supplier relationships</li> <li>•Supply strategy</li> <li>•Out-come driven supply chains</li> </ul>
	Structure	<ul style="list-style-type: none"> <li>•Lean vs. Agile</li> <li>•Decoupling point</li> <li>•Humanitarian supply chains</li> </ul>
	Drivers	<ul style="list-style-type: none"> <li>•Facilities, Inventory, Transport</li> <li>•Information, Sourcing, Pricing</li> <li>•Forrester effect</li> </ul>

Figure: Framework for structuring drivers



Source: (Chopra & Meindl, 2015)

The framework for structuring drivers will be the foundation for the analysis section. The analysis will follow this model from the top-down. This model is really easy to use because it covers some of the important headlines in supply chain management. In the top you have the strategy that propagates down to the structure and spreads out to all the drivers. It is important to determine the strategy and structure, before managing the drivers.

## 5.1 Strategic

The strategic part is including the competitive strategy and the supply chain strategy. The competitive strategy is relative to the competitors. The strategy set to satisfy customers through products and services.

- Competitive strategy and supply chain strategy must fit together with all the drivers to form an overall coordinated strategy.
- The different functions inside a company must be able to structure towards executing the strategies successfully.
- The design of the overall supply chain and the role of each stage must be aligned to support the supply chain strategy (Chopra & Meindl, 2015).

### 5.1.1 Buyer-supplier relationships

Below is the model from (Bensaou, 1999) literature showing the different characteristics on the four relationship types.

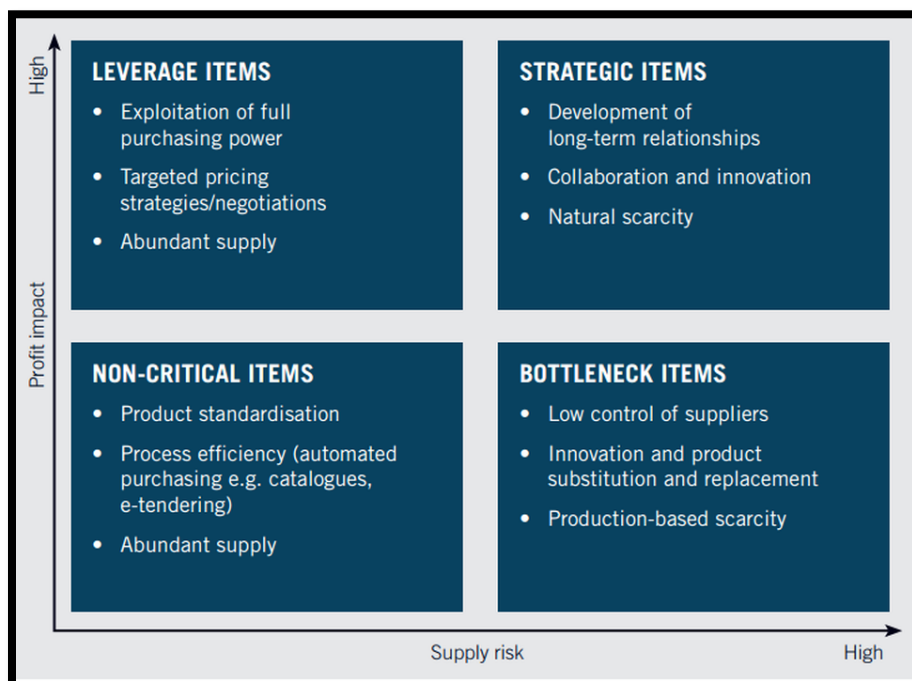
Buyer's specific investments	High	<b>Captive buyer:</b>  <u>Product characteristics</u> Mature, little innovation  <u>Market characteristics</u> Stable demand, limited growth, few players, internal manufacturing  <u>Supplier characteristics</u> Large supply, few strong suppliers with strong bargaining power	<b>Strategic partnership:</b>  <u>Product characteristics</u> Highly innovative, close to buyer's core competency, large capital investments  <u>Market characteristics</u> Strong demand and high growth market, competitive and concentrated market  <u>Partner characteristics</u> Large multiproduct supply houses, strong recognized skills and capabilities, close collaboration
	Low	<b>Market exchange:</b>  <u>Product characteristics</u> Highly standardized, mature technology Little innovation, technically simple Small capital investments  <u>Market characteristics</u> Stable demand, highly competitive, many capable suppliers  <u>Supplier characteristics</u> Low switching costs, low bargaining power	<b>Captive supplier:</b>  <u>Product characteristics</u> Technically complex products (developed by suppliers), Heavy capital investments required  <u>Market characteristics</u> High-growth market segment, fierce competition, few players, unstable market  <u>Supplier characteristics</u> Strong supplier proprietary technology, suppliers with strong financial, low supplier bargaining power, heavy supplier dependency on the buyer and economic
		Low	High
Supplier's specific investments			

- The strategic partnership founds on mutual trust and commitment while investing equally high amounts to the business.
- The captive buyer has high investments tied in the business and wants to exchange information with the supplier on a high level – but in this case the supplier has the high bargaining power.
- The captive supplier is somewhat the same, just the other way around – the supplier has high investments in the business and tries to create a strong bond towards the buyer.
- On the market exchange type this is the most common where you have limited contact and simple interactions.

### 5.1.2 Classifying material requirements

While working on specifying the relationship with buyer/supplier – it is important to recognize the product requirements in question. Below model shows four different general segments based on two dimensions: profit impact and supply risk.

Figure: Items segments model developed by (Kraljic, 1983)



Model Source: (Webb, 2017)

With a high profit impact the item is very important for the business to generate profit. With a low impact the item is not important and focus on lowering cost is more important. With a high supply risk

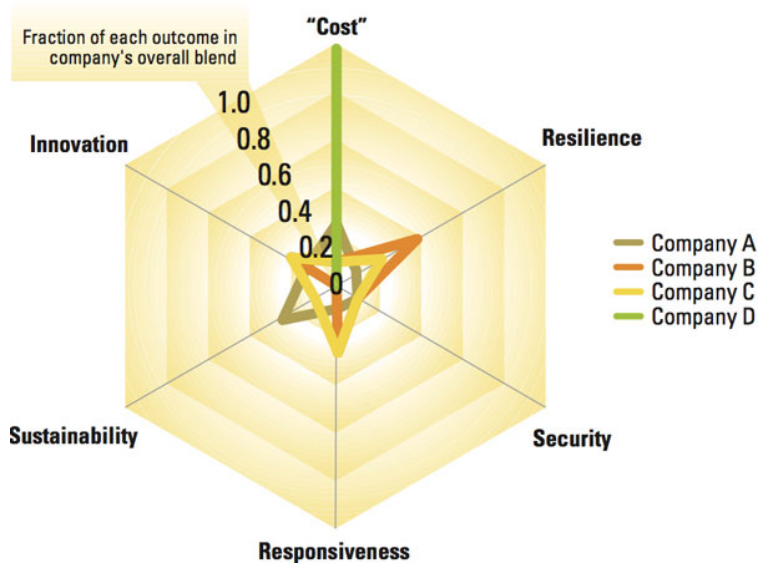
the item can be difficult to obtain or perhaps there is only 1-2 suppliers available. With a low supply risk the item is easy find and obtain and the focus on price is more important.

- Strategic items are typically highly innovative with a high potential to gain profits and on the other side scarce resources available – so in this situations it is naturally to work in close collaboration with the suppliers.
- Bottleneck items can also be highly innovative with limited resources, but at the same time low impact on profits and you will naturally seek alternatives of supply.
- Leverage items are very important for the profitability and you seek to negotiate with all the buying power available.
- Non-critical items are typically very standardized commodity that needs simple replenishment on routine terms.

### 5.1.3 Out-come driven supply chains

The spider web model by (Melnik, Davis, Spekman, & Sandor, 2010) visualizes the combinations of different outcomes in the supply chain. Some say that all outcomes are mutually important for each company, but in practice a company typically show strong in one or two dimensions. Therefore blending actors with various outcomes in the supply chain will give competitive advantages as a whole.

Figure: Spider web model on supply chain outcomes



Source: (Melnik, Davis, Spekman, & Sandor, 2010)

The model is good in the sense, that it covers more dimensions than the traditional look – cost, delivery and quality. It makes it possible to compare actors in a visual way. But while blending more outcomes in a supply chain it complicates the measurement system. When only focusing on one outcome it is much easier to set up measures. If improvements are needed in one outcome it might have to reduce the outcome in another – trade-offs.

## 5.2 Structure

To have a strategic fit it means structuring drivers in respect of efficiency vs. responsiveness, which is dictated by the supply chain strategy.

### 5.2.1 Efficiency (Lean) vs. Responsiveness (Agile)

The way to distinguish between efficiency vs. responsiveness is to analyse implied uncertainty vs. responsiveness spectrum in the supply chain. Relatively high uncertainty in the supply chain is best served with increasing the responsiveness (Chopra & Meindl, 2015).

**Table: Definition on efficiency vs. responsiveness**

	<b>Efficiency (Lean)</b>	<b>Responsiveness (Agile)</b>
<b>Primary goal</b>	Supply demand at minimum costs	Respond quickly to demand
<b>Product design</b>	Maximize performance and minimize costs	Create modularity to allow postponement
<b>Pricing</b>	Low margins – Price is a customer high focus	High margins – Price is not important
<b>Manufacturing</b>	Lower costs with high utilization	Capacity flexibility/buffer to deal with demand uncertainty
<b>Inventory</b>	Minimize inventory to lower costs	Buffer inventory to deal with demand uncertainty
<b>Lead-time</b>	Try to reduce lead-time without increasing costs	Reduce lead-time extensively even if costs increase
<b>Suppliers</b>	Choice of suppliers based on cost and quality	Choice of suppliers based on speed, flexibility, reliability and quality

Source: (Chopra & Meindl, 2015)

The below models also display difference between Efficiency (Lean) and Responsiveness (Agile) in a simple way. The first model is focusing on uncertainty from supply and demand. The second model focuses on the risk involved in supply and demand. In theory they are somewhat similar but with various wording – it depends from what angle it is viewed.

		<b>Demand Uncertainty</b>	
		Low	High
<b>Supply Uncertainty</b>	Low (Stable process)	Efficient Supply chain (Lean)	Semi-Responsive Supply chain
	High (Evolving process)	Risk-hedging Supply chain	Agile supply chain

		<b>Demand</b>	
		Predictable	Unpredictable
<b>Supply</b>	Long lead-time	Plan & Execute ( <b>Lean</b> )	Delayed configuration ( <b>Postponement</b> )
	Short lead-time	Continuous replenishment	React & Execute ( <b>Agile</b> )

The theory says that humanitarian supply chains perceive a responsive/agile approach due to the high degree of demand uncertainty. But also whether to emphasise on investing in inventory through postponement or full agility, it depends on the supply uncertainty and supply lead-time. Some of the factors can be tied to the actual commodity – some commodities have low uncertainty and short lead-time, so price and specification of the commodity can be a factor too.

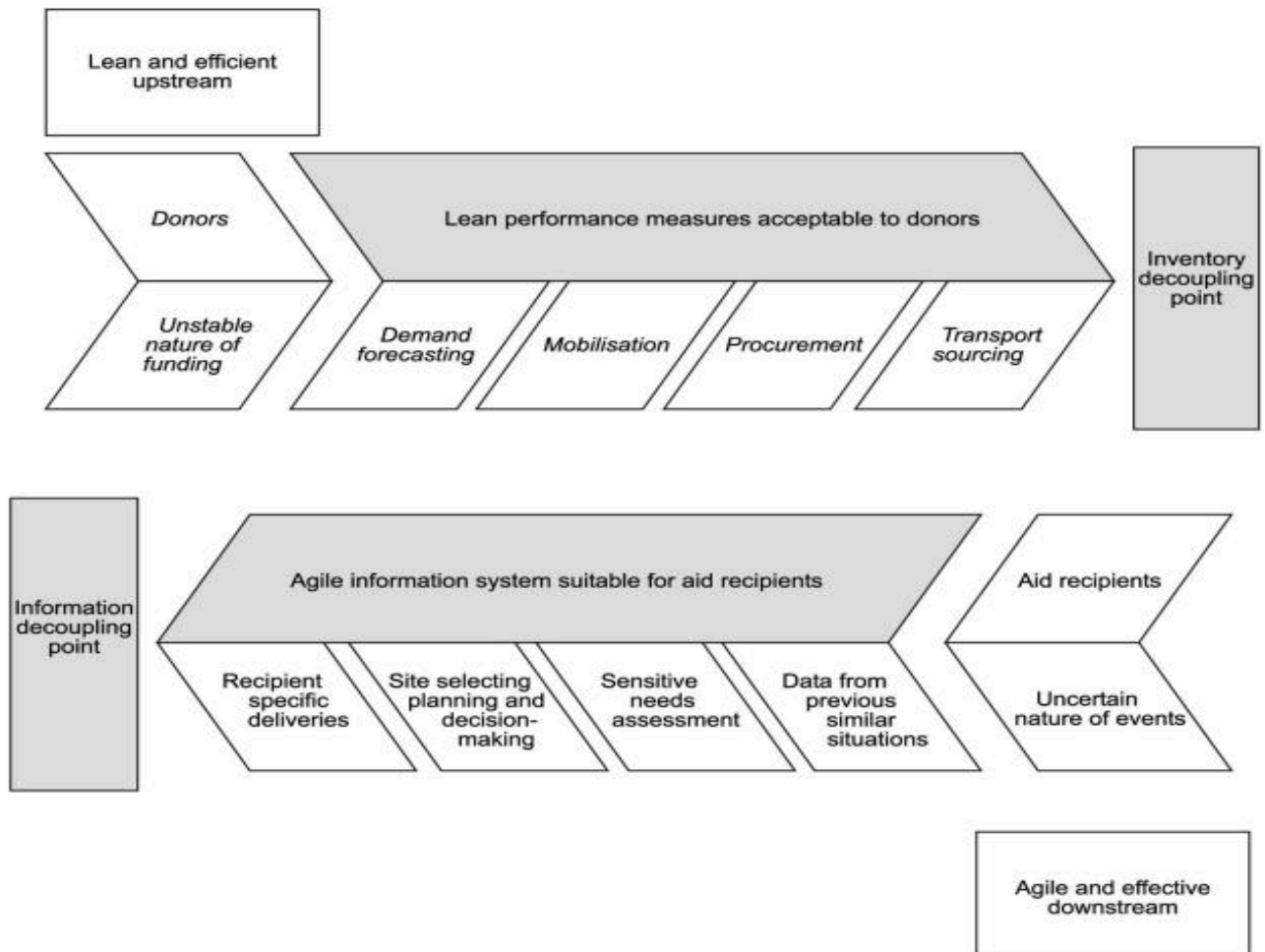
### 5.2.2 Humanitarian supply chains (Decoupling point(s))

The framework for operating a humanitarian supply chain shows that upstream activities should work as lean as possible towards the inventory decoupling point – moving goods as far downstream as possible in securing the needed responsiveness at the end of the chain. But activities far downstream should be able to move as agile as possible to cover the needs of the aid recipients. Agility is needed in less predictable environments where the demand vary a lot.

*“Applying this principle, the humanitarian supply chain at the level of the international donor in developed countries should be lean for upstream activities such as needs assessment (remote demand forecasting), mobilisation of sufficient financing, people, skills and goods, procurement, transportation*

*sourcing, disaster preparation and planning and related upstream supply chain activities.” (Oloruntoba & Gray, 2006)*

Figure: An agile supply chain for humanitarian aid



Source: (Oloruntoba & Gray, 2006)

Agility downstream is crucial for delivering aid fast, but it has also another function in creating attraction from donors to the organisation: *“Attraction of donors to a cause is largely based on such “agility appeal”, and it may prove difficult to convince donors of the desirability of the routines and procedures necessary for longer-term supply chain efficiency and the waste elimination associated with leanness, but which have low media impact.”* (Oloruntoba & Gray, 2006)

### 5.3 Drivers

The supply chain requires the right balance between efficiency and responsiveness to support the overall strategy. The level of either efficiency vs. responsiveness performance in the supply chain is based on the functional drivers. These are six drivers in two categories: logistical drivers and cross-

functional drivers. Logistical drivers still have the highest impact on performance measures, but cross-functional drivers are becoming more important in modern markets. One driver cannot drive performance alone, all these drivers interact together and the right trade-offs have to be made to achieve the desired level of responsiveness. (Chopra & Meindl, 2015)

### 5.3.1 Logistical drivers

The logistical drivers dictate the physical structure of the supply chain: Facilities, inventory and transportation.

- Facilities:
  - Places where inventory is stored, assembled, or fabricated (Production sites and storage sites)
  - Competitive strategy - economies of scale (efficiency priority) or larger number of smaller facilities (responsiveness priority)
  - Location - centralization (efficiency) vs. decentralization (responsiveness)
  - Capacity – flexibility vs. efficiency
- Inventory:
  - Raw materials or finished goods within a supply chain
  - Inventory is a cost and has influence on responsiveness. If responsiveness is a strategic competitive priority, a firm can locate larger amounts of inventory closer to customers. If cost is more important, inventory can be reduced to make the firm more efficient
  - Components of inventory: cycle stock, safety stock, seasonal stock, etc.
- Transportation:
  - Moving inventory from point to point in a supply chain
  - Combinations of transportation modes and routes – air, sea, road, rail (efficiency vs. responsiveness)
  - If responsiveness is a strategic competitive priority, then faster transportation modes can provide greater responsiveness to customers who are willing to pay for it. Use slower transportation modes for customers whose priority is price (cost)

### 5.3.2 Cross-functional drivers

The cross-functional drivers dictate the information-based structure of the supply chain: information sharing, sourcing and pricing.

- Information:
  - Data and analysis regarding inventory, transportation, facilities throughout the supply chain (forecasting and demand planning)
  - Potentially the biggest driver of supply chain performance – coordination and information sharing (information technology – create links between stakeholders in the supply chain)
  - Information allows the supply chain to become more efficient and more responsive at the same time (reduces the need for a trade-off)
- Sourcing:
  - Set of business processes required to purchase goods and services in a supply chain and supplier selection: single vs. multiple suppliers, contract negotiation
  - Sourcing decisions are crucial because they affect the level of efficiency and responsiveness in a supply chain (make or buy – in-house or outsource)
- Pricing:
  - Price associated with goods and services provided by a firm to the supply chain
  - Pricing strategies can be used to match demand and supply and firms can utilize optimal pricing strategies to improve efficiency and responsiveness

## 6. Analysis

In the following section will be an analysis of external factors in East Africa, as Novo Nordisk wants to establish more supply chains to the region. While also analysing the way Red Cross operates their supply chains in this region, should give some answers to how Novo Nordisk should act in terms of strategy, structure and drivers.

### 6.1 Novo Nordisk

Novo Nordisk has a clear social strategy to defeat diabetes in as many countries as possible. (Novo Nordisk, 2019) The value of having a patient centred business approach, several programs have been formed to address the many patients with limited resources, but still require diabetes treatment.

The department of Access to Care in Novo Nordisk is one of the key architects of projects designed to increase the availability and accessibility of the Novo products to the patients segments that are most vulnerable. Their three main areas of focus are:

- Making Novo Nordisk medicines available and affordable
- Building capacity in health systems and societies
- Increase access for the most vulnerable populations

Novo Nordisk and NGO World Diabetes Foundation (WDF) shares a common past, as WDF were initially setup by Novo Nordisk in order to increase the knowledge on how to diagnose and treat diabetes in the third world countries. As a non-governmental organisation WDF could be able to be present in areas where Novo could not. So far WDF is doing great affords to battle diabetes in several African countries. Primarily with the aid from Novo, WDF have built healthcare capacity in the shape of clinics, and thereby insuring accessibility of diabetes diagnostics and treatment. (WDF, 2002)

Where WDF focuses their efforts in increasing knowledge about diabetes, Novo Nordisk is equally trying to increase the accessibility of their products to the vast number of patients, not having the resources to purchase the latest of long acting insulin, or GLP-1 type (Wiki, 2019). As an integrated part of the official Novo Nordisk strategy and guiding principles, a set of values have been defined to guide all aspects of the business decisions. This is called The Novo Nordisk Way (Jensen, 2017) and applies to all levels of the organisation.

*“It has very much become embedded in their strategy – they want to use their core competence to help the poor.”* (Bøtcher, 2019)

The department of Access to Care works closely together with WDF on many different areas, and with many different private partners to setup networks of support for people with diabetes around the world.

Jane Rasmussen, a Novo Nordisk Supply Chain Director, was touring in Kenya and Ethiopia and discovered short supply on insulin in a few clinics. She was very concerned if these shortages were affecting the children program. CDiC is a Novo Nordisk based program called Changing Diabetes in Children that ensures care and medicine for children in low and middle-income countries (CDiC, 2009).

## 6.2 Current state in East Africa - Novo Nordisk

Novo Nordisk is very committed in East Africa to make a change. In the Access to Insulin Commitment by Novo Nordisk, they push pricing in commercial channels to reach as many people as possible with diabetes. *“Our continued commitment to having a low-cost insulin in our product portfolio and to producing and making human insulin available for years to come, is formulated in our Access to Insulin Commitment which in 2016 was updated to include other low-income countries and selected humanitarian organisations. In 2018, the average selling price was USD 2.89 per vial. As a result, an estimated 0.3 million people were treated with insulin for on average 12 cents per day. Beyond this commitment, Novo Nordisk sold human insulin at or below the ceiling price in other countries, reaching an estimated 5 million people in 2018.”* (Novo Nordisk, Access to Insulin Commitment, 2019) The predominant coverage in the commitment is Africa – can be seen in the map of countries.

In the children program there is more than 19.000 enrolled children in the 14 countries covered so far. In Kenya the program had just over 1800 children active in the program – meaning they get treatment and regularly handed out insulin. For these children with type-1 diabetes it is very important to have insulin on stock, when the patient asks for it. For instance in Kenya – the program has set up 9 clinics to take care of the patients, and also where Novo donates/hands out free insulin to the children (Nielsen, 2019). Novo Nordisk wants to keep expanding their coverage to reach more people with diabetes in East Africa.

## 6.3 PESTEL

East Africa is a region with a mix of strong economies, conflicts, but also poverty. The region consists of 20 countries defined by the United Nations. In the following outlook Kenya and Ethiopia is in focus, but also some comparing with other countries.

Sources of general country data: CIA – The World Factbook, MarketLine, and The Economist

### 6.3.1 Political

Europeans have suppressed many eastern African countries for decades in the past. In the year 1900, the Europeans began to withdraw from the colonies giving independence to the African people. Since the end of colonialism East African countries were riven with political coups, ethnic violence and oppressive dictators. It has been many years with troubles and conflicts in the region. It has been difficult for the countries to establish a stable government.

Kenya has been independent since 1963 and led by presidency of only 2 persons in 64 years. For a long period the country only had one political party. Pressure from outside Kenya made the political liberalization for a multi-party parliament in the early 90's, but even so the opposition failed to defeat the president. This led to violence and fraud. Finally in 2002 the president stepped down after 40 years ruling the country. The new president in 2002 pledged to reduce corruption, but even so it was estimated around \$1 billion was lost due to bribery from 2002 to 2005. Kenya adopted a new constitution in 2010 and a new president was elected in 2013 – Uhuru Kenyatta, who is still the current president of the country. The latest elections in 2017 was not without trouble since the first election was annulled by the supreme court due to irregularities, and the second election Kenyatta also won. The opposition boycotted the second election and the overall political uncertainty during elections led to widespread violence in the country. The handshake between the president and the opposition in March 2018 put an end to the tensions.

Ethiopia stayed free from colonial rule from the Europeans with exception in 1936-1941 only. The country was led by the ancient monarchy. The ruling regime was toppled in 1991 by rebel forces and a constitution was adopted in 1994 – the first multi-party election was held in 1995. The country has been in everlasting battles with Eritrea about where the border should be outlined. Only in the last decade there has been peace negotiations and very recently in July 2018 a peace agreement was in place, and the border was reopened in September 2018.

Tanzania became independent in the 1960's and the republic of Tanzania was formed in 1964 together with Zanzibar. The country was only turned towards democratic ways in 1995 and the first general election was held since 1970's. The same political party that won in 1995 has won all five elections ever since. The ruling party is forecast to remain in power during the next election in 2020. However latest election on Zanzibar in 2015 made a lot of violent tension, due to irregularities cited by the Supreme Court. The EU and US has raised their concerns over democratic values and rights in Tanzania.

Somalia on the other hand has failed to establish any stable government in several attempts. The country became independent in the 1960 and was ruled by dictatorship since 1969 characterized by persecution, jailing, and torture of political opponents and protesters. The regime collapsed in 1991 and clans in various regions now run the country. Since 2000 the country has been struggling to establish security and governing institutions. A federal government and parliament was formed leading to establish a new Somalia constitutions supported by the UN. UN has also support with

humanitarian efforts for several years. In 2012 a number of 275 new members was appointed to the parliament and the parliament elected a new president. The country lack effective national governance and in constant fight with Al-Shabaab and ISIS. Al-Shabaab wants to destroy the Federal Government and establish Islamic rule across Somalia. ISIS wants to replace the Federal Government and instead implement a strict view of Sharia.

The East African countries are in general lacking government stability. The countries independence is fairly young and lacking governance. Some of the countries are moving towards more stable conditions in the recent years, but Somalia having Al-Shabaab is threatening the region on terror.

Corruption is a widespread problem in the region and some of it is actually encountered while dealing with the governments. Foreign companies that try to enter the market tend to collaborate with private companies in i.e. Kenya (Petersen, 2019). *“From my experience; try to avoid doing business with the government. Better to say no, instead of ending in a difficult situation with the government. They are not always playing by the rules or try to change the deal in the last minute. K+N was doing some logistical work for KEMSA (Kenyan medical supplies authority) that ended up being a nightmare for us. They kept pushing us to bend the deal.”* (Arain, 2019)

The (Corruptions Perceptions Index, 2018), which ranks 180 countries and territories by their perceived levels of public sector corruption according to experts and businesspeople, uses a scale of 0 to 100, where 0 is highly corrupt and 100 is very clean.

**Table: Corruptions Perceptions Index (CPI)**

Country	CPI score 2018	Rank 2018	CPI score 2017	CPI score 2016	CPI score 2015	CPI score 2014
Denmark	88	<b>1</b>	88	90	91	92
USA	71	<b>22</b>	75	74	76	74
Rwanda	56	<b>48</b>	55	54	54	49
South Africa	43	<b>73</b>	43	45	44	44
Tanzania	36	<b>99</b>	36	32	30	31
Ethiopia	34	<b>114</b>	35	34	33	33
Djibouti	31	<b>124</b>	31	30	34	34
Kenya	27	<b>144</b>	28	26	25	25
Uganda	26	<b>149</b>	26	25	25	26
Eritrea	24	<b>157</b>	20	18	18	18
Burundi	17	<b>170</b>	22	20	21	20
South Sudan	13	<b>178</b>	12	11	15	15
Somalia	10	<b>180</b>	9	10	8	8

Source: [Transparency.org](https://www.transparency.org)

It reveals that the continued failure of most countries to significantly control corruption is contributing to a crisis in democracy. While there are exceptions, the data shows that despite some progress, most countries are failing to make serious inroads against corruption. Below table shows some of the countries in the East Africa region plus Denmark and USA to compare.

Denmark has been leader of the index together with New Zealand for several years and on the other end of the index is Somalia. Even though in history Kenya has tried to battle corruption – Kenya is still in the lower part of the index. Closer to the middle, but still in the lower part, shows Ethiopia and Tanzania. Rwanda is one of the countries that score best from East Africa. As the leader of the board, Denmark is considered as a prime example on how to defeat corruption to a near zero. The Danes has a mutual trust in the government running the country, Denmark is a social political country that cherish diversity. Whereas in some African countries the view is very different, when people reach power and wealth they tend to suppress the poor as they find it easier to control the population when the majority live in poverty (Petersen, 2019).

The political stability and rule of law is very weak in these countries. Rwanda is one of the countries that perform better, but Kenya, Ethiopia and Uganda scores very low on this perception (The Global Economy.com, 2017). *The index is an average of several other indexes from the Economist Intelligence Unit, the World Economic Forum, and the Political Risk Services, among others.* The political stability perception index shows the likelihood of the government to be destabilized or overthrown by rebel force. The rule of law index shows the confidence in the system in terms of the rules, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. See appendix 2.

Insecurity in several parts of Ethiopia has created operational challenges for humanitarian agencies on the ground. These challenges include looting, road blockages, damage to trucks and other, restrictions to staff movement, and delays faced in deliveries. Ethnic tensions and conflicts continue in several parts of the country. (WFP, 2018)

Generally for the countries importation regulatory is not a problem as long as the products is registered at the Ministry (Chong, 2019). With NGO's on the other hand, it can be difficult to be granted Tax Exemption. For instance in Kenya the Tax Exemption process has been misused in the past, forced the government to tighten the requirements and approval process. Large numbers of

NGO companies started to pop up in Kenya and what really happen in some NGO's was illegal importing of commercial goods and money laundering (Petersen, 2019).

*"A Tax Exemption is divided in 2 steps: Master approval and single approval for every shipment. The Master is specific to the products or project that you're importing or doing. When you apply for an exemption you refers to the Master agreement, but every shipment still needs to be inspected."* (Arain, 2019)

### 6.3.2 Economic

East Africa is the fastest growing region in Africa mainly led by Kenya and Ethiopia. Ethiopia for instance had on average more than 7% annual growth rate on GDP in the last decade according to the International Monetary Fund (IMF, 2019). In comparison stable economies of Europe has an annual growth around 1-2%. These developing countries are growing fast and are showing to become interesting markets in the future, but the population is also growing very fast and it might become difficult to create enough jobs for everyone (Brooks, 2019). In the year 2017 Ethiopia was the high runner with GDP growth rate of 10,2% but even then Denmark still produced 4 times larger GDP amount than Ethiopia, while Ethiopia's population is 18 times larger than Denmark. (The World Bank - Databank, 2017)

	GDP (current US\$) (2016)	GDP (current US\$) (2017)	Inflation (annual %) (2016)	Inflation (annual %) (2017)	Current account balance (US\$) (2016)	Current account balance (US\$) (2017)
<b>Denmark</b>	311,99 Billion	329,87 Billion	0,7 %	1,4 %	24,69 Billion	26,27 Billion
<b>Ethiopia</b>	73,00 Billion	80,56 Billion	10,4 %	6,3 %	-8,27 Billion	-5,57 Billion
<b>Kenya</b>	70,88 Billion	79,26 Billion	8,1 %	8,6 %	-3,70 Billion	-5,02 Billion
<b>Tanzania</b>	49,77 Billion	53,32 Billion	7,5 %	2,7 %	-2,15 Billion	-1,63 Billion
<b>Uganda</b>	24,13 Billion	26,00 Billion	3,6 %	6,3 %	-0,84 Billion	-1,27 Billion
<b>Rwanda</b>	8,48 Billion	9,14 Billion	5,5 %	7,3 %	-1,34 Billion	-0,63 Billion
<b>Somalia</b>	6,76 Billion	7,05 Billion	..	..	..	..

Source: (The World Bank - Databank, 2017)

What is most alarming in the economical figures is the account balance. For almost every country in the East Africa the balance is negative – meaning the country is importing more than exporting. This imbalance can cause problems in terms of less foreign currency. In fact Ethiopia has had ugly problems with currency shortages – this means the country is unable to buy products overseas, and are causing empty shelves. In Ethiopia the approval process from the banks to get foreign currency exchange is difficult and lengthy (Chong, Logistics Manager Novo Nordisk East Africa, 2019). (Adow, 2018)

### 6.3.2.1 Logistics Performance Index (LPI)

The LPI is compiled by The World Bank to benchmark countries on trade logistics performance. The index is based on five criteria: customs, infrastructure, track & trace, ease of international shipments, logistics service quality, and timeliness. Together with these five measures the countries get a score and ranked against others – a total of 160 countries on the leader-board. (LPI - World Bank, 2018)

**Table: Logistics performance index (LPI)**

	Overall LPI score (2018)	Overall LPI rank (2018)	Overall LPI score (2016)	Overall LPI rank (2016)
<i>Denmark</i>	3,99	8	3,82	17
<i>South Africa</i>	3,38	33	3,78	20
<b>Rwanda</b>	<b>2,97</b>	<b>57</b>	<b>2,99</b>	<b>62</b>
<b>Tanzania</b>	-	-	<b>2,99</b>	<b>61</b>
<b>Kenya</b>	<b>2,81</b>	<b>68</b>	<b>3,33</b>	<b>42</b>
<b>Djibouti</b>	<b>2,63</b>	<b>90</b>	<b>2,32</b>	<b>134</b>
<b>Uganda</b>	<b>2,58</b>	<b>102</b>	<b>3,04</b>	<b>58</b>
<b>Ethiopia</b>	-	-	<b>2,38</b>	<b>126</b>
<b>Somalia</b>	<b>2,21</b>	<b>144</b>	<b>1,75</b>	<b>158</b>
<b>Eritrea</b>	<b>2,09</b>	<b>155</b>	<b>2,17</b>	<b>144</b>
<b>Burundi</b>	<b>2,06</b>	<b>158</b>	<b>2,51</b>	<b>107</b>

Source: (LPI - World Bank, 2018)

Unfortunately Ethiopia and Tanzania didn't get any measurements in 2018 – the last score is from 2016. The leader of this ranking is Germany, close followed by Denmark on 8<sup>th</sup> position. The best performing country in Africa is South Africa with a 33<sup>rd</sup> rank. Out of a total of 160 countries Rwanda, Kenya and Tanzania performs above average. Nairobi Kenya is used in several logistics networks as a central hub reaching nearby countries in the region. Ethiopia performs below average compared to other countries in East Africa. Many of these countries are struggling with infrastructure and slow processing of importing goods.

Take this example of infrastructure in Kenya: the main road connection from Kenya's major harbour in Mombasa is considered dangerous to most people. The road is approx. 470 Km from the harbour to Nairobi Airport on which you can expect an average speed of 40 km/h if everything goes well. You should not consider driving these roads in the night – it is not recommended (Petersen, 2019).

### 6.3.2.1 Insulin market

The insulin market on a global scale has become a large industry for several large corporations including the current market leader Novo Nordisk (Envision, 2018). The forecast for 2019-2022 shows the market is predicted to grow at high pace.

**Table: Insulin market demand data & forecast**

	2017	2018	2019	2020	2021	2022
<b>World demand Million USD</b>	38.880	42.006	45.194	48.744	52.097	55.674
<b>Growth</b>	6,4 %	8,0 %	7,6 %	7,9 %	6,9 %	6,9 %
<b>Tanzania demand Million USD</b>	0,3	0,4	0,4	0,5	0,6	0,6
<b>Growth</b>	4,2 %	24,3 %	6,3 %	12,8 %	11,2 %	12,7 %
<b>Ethiopia demand Million USD</b>	0,4	0,4	0,4	-	-	-
<b>Growth</b>	-1.0%	6.6%	2.6%	-	-	-
<b>Kenya demand Million USD</b>	1,8	1,8	1,8	1,9	1,9	1,9
<b>Growth</b>	-3,8 %	1,6 %	1,3 %	1,1 %	2,4 %	2,1 %

Source: (Global Research & Data Services )

It is interesting to see the insulin market in Tanzania, Ethiopia and Kenya covers such a small part of the total global insulin market – when taking the social factors into account. Shown in the next section is the population in a few of the East African countries, this must mean that the insulin market in East Africa is only discovered to a small degree. Kenya is one of the countries that have been working most effectively in defeating diabetes. As the region develops the insulin market has to grow a lot more in the future.

### 6.3.3 Social

East African countries are some of the most rapidly growing populations in the world. But poverty, corruption, diseases and lack of social security are some of the major challenges. The fertility rate is around 5 children born per women in most of the countries, but less in the urban areas. Still while many women give birth to new life, the poor life conditions don't help – the life expectancy age at birth is around 60 years for the majority of the countries and even less in Somalia where the life conditions has been miserable for many years. In fact the population is extremely young compared to western countries such as Denmark. Around 60 % of the population in East African countries is about the age of 0-24 years and even higher in Uganda with 68 %, and around 30 % is in the age 25-54 years (CIA, 2019).

A lot of people in East Africa live below the poverty line – about 30% in Ethiopia is below the poverty line. There are not enough jobs for the population and many young people are unemployed. The

countries are lacking reasonable social security and health conditions. Job opportunities cannot keep up with the fast growing population – the future is not bright, unless major investments in creating jobs or government support for family planning will happen.

	Population, total (2016)	Population, total (2017)	Life expectancy at birth, total (years) (2016)	Life expectancy at birth, total (years) (2017)	Diabetes prevalence (% of population ages 20 to 79) (2017)	Current health expenditure (% of GDP) (2016)
<b>Denmark</b>	5,73 Million	5,76 Million	80,9	81,0	6,41 %	10,35 %
<b>Ethiopia</b>	102,40 Million	104,96 Million	65,5	65,9	7,47 %	3,97 %
<b>Kenya</b>	48,46 Million	49,70 Million	67,0	67,3	2,92 %	4,55 %
<b>Tanzania</b>	55,57 Million	57,31 Million	65,7	66,3	5,75 %	4,14 %
<b>Uganda</b>	41,49 Million	42,86 Million	59,9	60,2	2,50 %	6,17 %
<b>Rwanda</b>	11,92 Million	12,21 Million	67,1	67,5	4,28 %	6,76 %
<b>Somalia</b>	14,32 Million	14,74 Million	56,3	56,7	6,05 %	..

Source: (The World Bank - Databank, 2017)

Ethiopia and Somalia has the highest percentage of diabetes prevalence. A figure of 7,47 % prevalence of 104 million people is quite a lot, and that suggests that Novo was right about turning focus on East Africa. Nevertheless expenditure on health care is really low in Ethiopia as well, only 3,97 % of their total GDP – which is not strong to begin with. Denmark is a smaller country, but still use more percentage of GDP on health while also generating much higher GDP than Ethiopia. Looking at these figures tells something about the quality of health care in East Africa being very low – due to low resources.

### 6.3.4 Technology

Technology is still at a developing stage in East Africa, but many countries are showing good growth. More technology companies are starting to show and more young people are going to the university to study.

	Mobile cellular subscriptions (2016)	Mobile cellular subscriptions (2017)	Individuals using the Internet (% of population)(2016)	Individuals using the Internet (% of population)(2017)
<b>Denmark</b>	6.985.035,0	6.978.348	97,0 %	97,1 %
<b>Ethiopia</b>	51.224.000,0	39.600.000	15,4 %	18,6 %
<b>Kenya</b>	38.982.188,0	42.815.109	16,6 %	17,8 %
<b>Tanzania</b>	40.044.186,0	39.953.860	13,0 %	16,0 %
<b>Uganda</b>	22.838.486,0	24.948.878	21,9 %	23,7 %
<b>Rwanda</b>	8.921.533,0	8.819.217	20,0 %	21,8 %
<b>Somalia</b>	6.653.040,0	7.119.000	1,9 %	2,0 %

Source: (The World Bank - Databank, 2017)

Especially telecommunication has become a huge industry in East African countries; even Somalia has a large telecommunication industry. Fixed connection communication is not the best in these countries but cell phones is still booming.

In Denmark there is more mobile subscriptions than there is people, but looking at the numbers from the East African countries a large portion of the population should have a mobile, if assuming that one person only holds one subscription. Interestingly the amount of subscriptions in Ethiopia fell significantly according to the World Bank – it looks like an odd figure. Perhaps the explanation lies in the fact that the government shut down the entire network without warning (Stein, 2017). Because in another source the figure shows 62,6 million subscribers in 2017 (Statista, 2019) and that tells the mobile industry is still booming and the figure should be more than 66 million subscriptions in 2018 (Ethiopianembassy, 2018).

On the other hand, East Africa is really lagging behind on Internet access. Uganda and Rwanda are two of the countries that have the most people using the Internet and Somalia are nowhere near widespread Internet access. Companies in Kenya mostly use computers for instance, but the fixed Internet access is not always stable and slow – and the country suffers from power shortages from time to time (Petersen, 2019). Looking at the Information from the country fact sheets it is fair to assume conditions would be similar in the rest of East African countries.

### 6.3.5 Environment

The environment in East Africa is very similar in all countries. The climate is tropical and desertification of the land is spreading. General issues for the countries are lack of resources, water and pollution. Poor management of the scarce resources is not helping at all. Uncontrolled cutting down forests leave deserted areas and also overgrazing is exhausting the soil, it will become more difficult to grow agriculture (CIA, 2019).

### 6.3.6 Legal

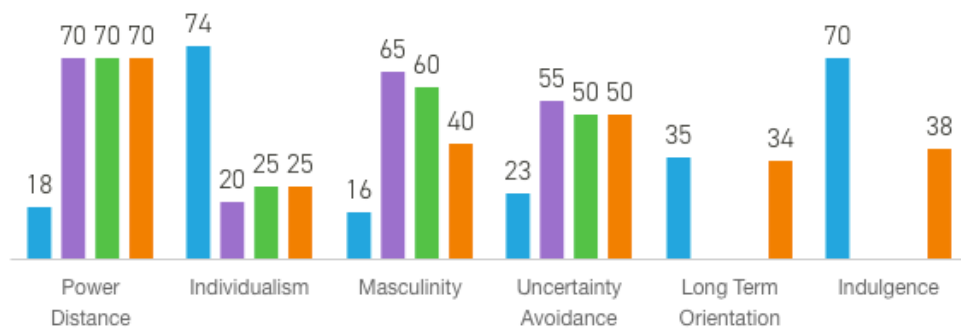
Ethiopia is a federal country. It adopted a civil law legal system. The federal laws are written both in English and Amharic languages. The Amharic version of the laws shall have the final authority (UNESCO Database). All the federal laws are published in the official Federal Negarit Gazeta, which is an official proclamation of the Ethiopian state. (ethiopia.gov.et, 1995)

The Kenyan, Tanzanian and Ugandan Legal System are based on English Common Law, and have based a constitution when the countries got independence. (UNESCO Database)

## 6.4 Hofstede insights on East Africa

In the following diagram is shown 3 different countries from East Africa, random selected, but with a little thought about these being leading members of the region. Simply to visualize the gap from the western world to East Africa, Denmark has been placed in the chart as well.

Even though western people have colonized most of the East African countries in the past, the culture today is very different. Especially when Danish companies try to do business in East Africa you sometimes forget about the cultural divide. It is very significant to consider African culture and work ethics on beforehand. The Hofstede Insights give a great visual comparison on the countries and easy to understand reliable background.



Dimensions:	Denmark	Ethiopia	Kenya	Tanzania
Large vs. Small Power Distance	18	70	70	70
Individualism vs. Collectivism	74	20	25	25
Masculinity vs. Femininity	16	65	60	40
Strong vs. Weak Uncertainty Avoidance	23	55	50	50
Long Term vs. Short Term Orientation	35	N/A	N/A	34
Indulgence vs. Restraint	70	N/A	N/A	38

Source: [Hofstede-insights.com](https://www.hofstede-insights.com)

Unfortunately the Hofstede research didn't include orientation perspective and indulgence/restraint – from Ethiopia and Kenya. It is fair to assume that these 2 factors might be similar to the scores of Tanzania, on the grounds of general information about the region captured in other data.

Kenya, Ethiopia and Tanzania all score relatively high on power distance – that means they have a hierarchical society. This means that people accept a hierarchical order in which everybody has a place and which needs no further justification. Hierarchy in an organisation is seen as reflecting inherent inequalities, centralisation is popular, subordinates expect to be told what to do and the ideal boss is a benevolent autocrat. On the other end of the spectrum is Denmark at the very low end of this dimension. This matches perfectly with what many foreigners in Denmark express: Danes do not lead, they coach and employee autonomy is required. With a very egalitarian mind-set the Danes believe in independency and power is decentralized in the workplace.

With a low score, but Ethiopia a small percentile lower, the 3 African countries are considered a collectivistic society. This is evident in a close long-term commitment. Loyalty in a collectivist culture is paramount and overrides most other societal rules and regulations. The society fosters strong relationships where everyone takes responsibility for fellow members of their group. In collectivist societies: offence leads to shame and the loss of face. Danes though are highly individual, in which people are expected to take care of themselves and their immediate families only. Small talk is kept at a minimum, in other words known for using a very direct form of communication.

Kenya and Ethiopia culture measures high on masculinity. Behaviour are based on the shared values that people should “strive to be the best they can be” and that “the winner takes all”. They are proud of their successes and achievements in life. Conflicts are resolved at the individual level and the goal is to win.

*“In Kenya they will always say, “Yes yes” – but they don’t know what they say yes to. Kenyan culture they want to be first responder, but when shit hits the fan it is easy to point the fingers.” (Arain, 2019)*

Interestingly Tanzania scores 40 on this dimension and is thus considered a Feminine society. In Feminine countries the focus is on “working in order to live”, managers strive for consensus, people value equality, solidarity and quality in their working lives. Conflicts are resolved by compromise and negotiation. Denmark scores even lower and are therefore considered a Feminine society. In Feminine countries, it is important to keep the life/work balance and you make sure that all are included. An

effective manager is supportive to his/her people, and decision-making is achieved through involvement. Managers strive for consensus and people value equality, solidarity and quality in their working lives. It seems like gender roles are changing in some of the East Africa. Western countries are increasingly affecting the African countries and growing wealth increases women into education and business (Hill, 2017).

In Denmark there is low uncertainty avoidance. This means that that Danes do not need a lot of structure and predictability in their work life. Plans can change overnight, new things pop up and the Danes are fine with it. This combination of a highly Individualist and curious nation is also the driving force for Denmark's reputation within innovation and design. At the workplace, the low score on Uncertainty Avoidance is also reflected in the fact that the Danes tell you if you are in doubt or do not know something. But the 3 East African countries is right in the middle of the spectrum – meaning they don't have a clear preference in this dimension. Neither of the countries is on the strong or weak side, but rather could be a blend of both perspectives in the society. One could assume, since these East African countries are so extensive in many ways, you see all kinds of perspectives on uncertainty avoidance. For instance it is fair to say, there is relatively great difference from living in Addis Ababa compared to villages close to the Somalia border.

A low score on Denmark and Tanzania indicates the culture is normative. People in such societies have a strong concern with establishing the absolute Truth; they are normative in their thinking. They exhibit great respect for traditions, a relatively small propensity to save for the future, and a focus on achieving quick results. The Hofstede research didn't give any score on Kenya and Ethiopia on long-term orientation.

With a low, Tanzanian culture is one characterized by Restraint. Societies with a low score in this dimension have a tendency to cynicism and pessimism. Also, in contrast to Indulgent societies i.e. Denmark, restrained societies do not put much emphasis on leisure time and control the gratification of their desires. People with this orientation have the perception that their actions are restrained by social norms and feel that indulging themselves is somewhat wrong. Denmark is an Indulgent country. People in societies Indulgence generally exhibit a willingness to realise their impulses and desires with regard to enjoying life and having fun. Unfortunate Kenya and Ethiopia didn't get any score on this dimension, but one would assume these 2 countries look similar to Tanzania. (Hofstede Insights, 2019)

## 6.5 Strategic - New sustainable Partnership solution with Red Cross

Through the work of the department of Access to Care, a range of partners has been appointed. These partners will assist Novo Nordisk in achieving the goal of increasing the accessibility of their products around the world. The renowned NGO of International Committee of the Red Cross (ICRC) have agreed to setup a partnership with Novo Nordisk in order to tackle the growing development of non-communicable diseases, such as diabetes, that is affecting the people living in humanitarian crisis around the world. (Novo Nordisk & Red Cross, Partnering for change, 2018)

Jane Rasmussen being Director of Logistics and Customer Service in Novo Nordisk, thereby having many years of experience working with both commercial- and NGO partners, know the details of the partnership with International Committee of the Red Cross (ICRC).

Jane made another observation in Ethiopia; the national Red Cross of Ethiopia had considerable stock of diabetes medicine, but at a substantial higher price. At this point the global contract was not made available to all Red Cross societies.

Novo Nordisk has been in charge for donating insulin to the children in the CDiC program. The scope is to create a future sustainable solution with through a partnership with Red Cross. Novo representatives have been touring the hospitals and clinics to ensure availability to the kids. The mission is to have Red Cross be responsible for the distribution and donation of the insulin – and procure directly from Novo at bottom price (Nielsen, 2019). Novo Nordisk are donating financial amounts to Red Cross in a period from 2018-2020 with up to 21,5 million Danish kroner (Novo Nordisk & Red Cross, Partnering for change, 2018).

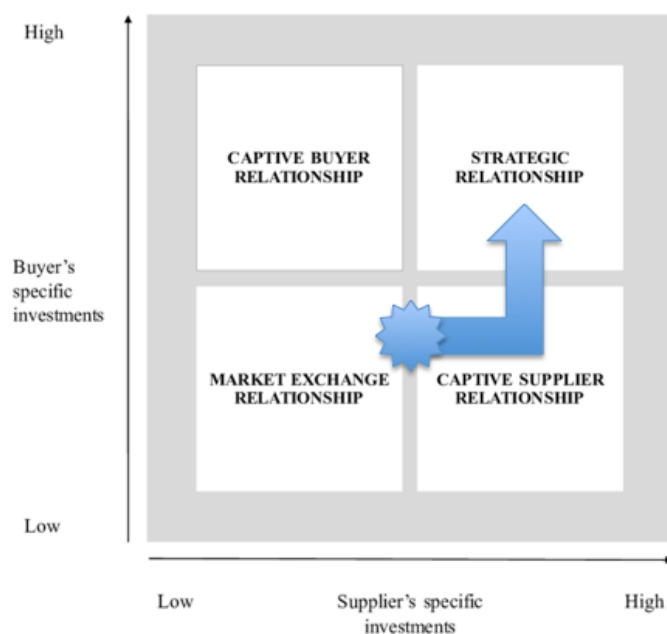
*“The International Committee of the Red Cross (ICRC), the Danish Red Cross (DRC) and Novo Nordisk have formed a partnership to tackle the growing issue of non-communicable diseases (NCDs) affecting millions of people living in humanitarian crises around the world. The partnership is anchored by a collective vision that all people living in humanitarian crises should have access to the NCD care they need, no matter where they are.”*

### 6.5.1 Relationship Management

It is important to take care about business relationships when you try to make a move into unfamiliar territory. Novo Nordisk is supplying a lot of customers in the commercial sector in East Africa *“In Ethiopia we have 2 distributors – we try to visit them regularly and have built a good relationship –*

*good communication. You have to have relationship to cooperate – when you meet for the first time, the relationship comes to a new level. We visit most customers maybe once a year.*” (Chong, Logistics Manager Novo Nordisk East Africa, 2019). For a lot of the customers in East Africa – Novo Nordisk is working with market exchange interactions. It means that transactions are mostly routine based. The market is very competitive and Novo is struggling with an Ethiopian manufacture of insulin (Julphar, 2013).

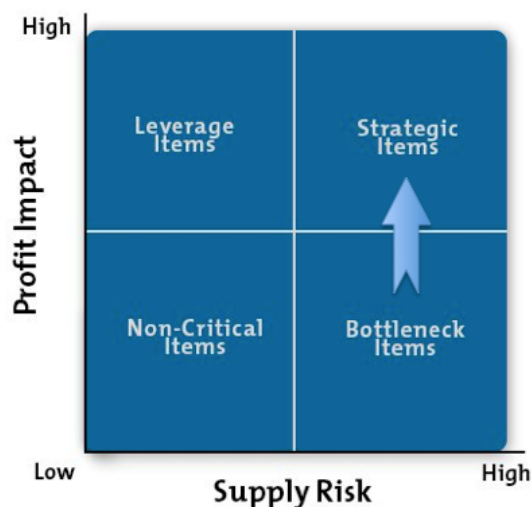
On basic human insulin it is fair to say that Novo Nordisk mainly work market exchange relationships – with wholesalers in East Africa. The picture is slightly different when Novo work in humanitarian action. As already established with the various programmes – Novo is using specific investments. With some NGO’s the relationship is somewhere in the grey area between market exchange and captive supplier. Diabetes is still less promoted in humanitarian settings, but Novo is chasing greater awareness in the field and constant spending resources on reaching the people in need.



What would be even more effective is to try move from a captive supplier towards a strategic partnership. The NGO’s needed to understand and generate mutual interest in serving the needs of diabetics. Hopefully through a strategic partnership with Red Cross, the insulin products will become a strategic part of the medicines portfolio.

- High investment from Novo Nordisk in managing effective production of insulin and selling the products at a very low price to help Red Cross keeping down costs. Novo also donates funds to Red Cross.
- High investment from Red Cross in managing a flexible agile supply of insulin to humanitarian settings – invest in inventory to overcome demand uncertainties.

If sight is moved to the opposite side from Red Cross point of view – the goal is with Novo Nordisk to leverage the items from a bottleneck position into a strategic position that benefits both parties.



Right now human insulin is a bottleneck item for most NGO's and also a low priority in terms of medicine. But in fact insulin is very important as well, because the need for diabetes medicine is increasing as earlier stated.

The high supply risk is defined on the grounds that: insulin is expensive to buy from commercial dealers and requires a special agreement. To place an order there's a minimum order quantity of 2000 vials and the lead-time is around 6 weeks (Huebe, 2019). Furthermore the logistical part of transporting insulin is very demanding – requires special equipment and specialized carriers.

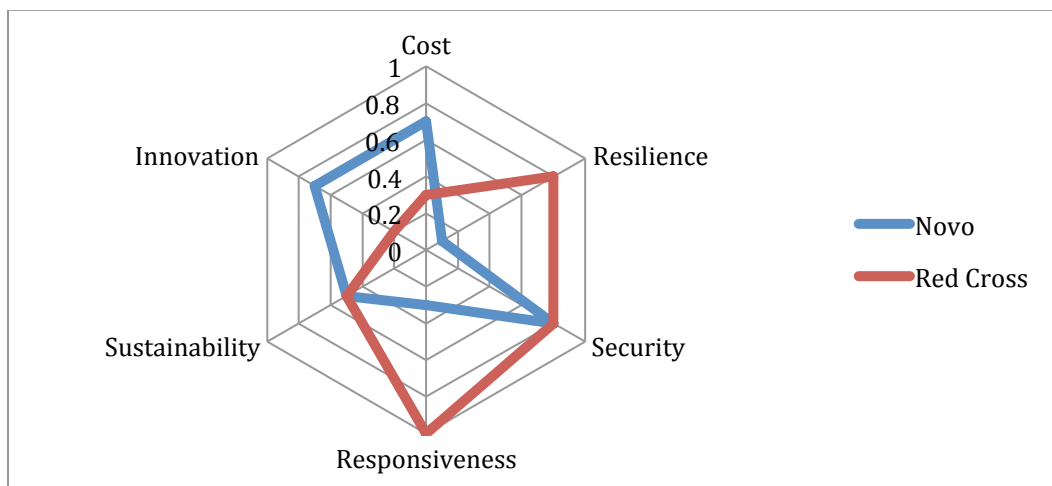
By leveraging insulin to a strategic item for Red Cross, it would become more incorporated in the overall supply chain and become easier to create diabetes interventions in East African countries. Novo and Red Cross will be able to support the World Diabetes Foundation more widespread.

### 6.5.2 Supply chain outcomes

While working towards a mutual strategic starting point, it is interesting to see what kind of outcomes these two organisations contribute to the supply chain – Novo Nordisk and Red Cross. One company cannot achieve top score in all parameters, but would have to collaborate with others that can add balance to the supply chain.

Below scores are purely subjective estimates on how it would look like and are not based on any surveys but based upon empirical and secondary data in this project.

#### Model: Perception of outcomes



- **Cost:** Novo Nordisk has a high score on efficiency and therefore good at minimizing costs. Red Cross has a low score of cost efficiency, because responsiveness has the high priority – responsiveness has a high price in logistics, when humanitarian action is needed quickly and effective.
- **Innovation:** Novo Nordisk scores high on innovative products and thrives to innovate better processes and supply chains. Red Cross has a low score on innovation since humanitarian aid & relief is more dependent on the business partners to provide innovative solutions. Humanitarian aid organisations have a larger degree of innovation in promotion to reach donors.
- **Resilience:** Novo has a low degree of resilience in the humanitarian supply chain, as they don't physically are involved in downstream activities – they outsource the responsibility to partners like Kuehne + Nagel and Red Cross. Red Cross has a high degree of resilience: this means they use resources on monitoring and reducing risk in the supply chain to overcome disasters, war

conflicts and other disruptions. An example could be: to keep medicine products in inventory as long as possible, before transporting to a war zone with a high risk of being raided.

- **Security:** This dimension is high on both parties, but might be perceived differently. Novo keeps logistical security to protect the product from any heat exposures, while monitoring the movement and temperature along the way. The products are often shipped in large quantities, making the content high value – it is important to use trusted carriers. Red Cross acknowledge the way to protect medicine from heat exposure in tropical conditions, but in general likes to use own trucks and drivers to ensure safe travel. Especially when working in countries, where war risk is high, security is a high priority.
- **Sustainability:** Novo is working sustainability with the 17 goals set by UN – “For Novo Nordisk, these goals present an opportunity to step up on sustainability, providing better health care for more people and delivering on an aspiration of zero environmental impact by 2030. We see the SDGs as an opportunity to align our priorities with those that can support global development. To achieve the 169 targets in the SDGs we aim to work through partnerships with both public and private organisations across multiple goals. We particularly welcome the recognition of the importance of the growing burden of diabetes and other non-communicable diseases (NCDs).” (Novo Nordisk, Sustainable business, 2015) From these 17 goals Novo is concentrating on two goals: Good health and well-being plus Responsible consumption and reproduction. Meanwhile Red Cross is working as an extended arm from the private sector to execute sustainable development in the third world countries. Red Cross is doing a lot of development work, but even so recycling and climate maybe not the highest priority? “Sustainable development can be defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." The ICRC, by its very nature as a humanitarian organization, has a moral duty to consider future generations when designing and implementing relief operations.” (ICRC, 2019)
- **Responsiveness:** Novo is a very lean like company and sterile work environment. As its core business is to produce insulin to the global market, Novo seek efficiency to reduce cost and increase the profit from it. In connection with humanitarian orders, Novo try to expedite and prioritize these – but the fact is: this is difficult in a large production organisation. Red Cross tend to purchase insulin good time before expected demand to buffer time in case of delays. Novo don't like products waiting in the dispatch warehouse – they want shipments pushed out as soon as possible. Red Cross scores high on responsiveness as this being their core business to react quickly. This also means Red Cross considers everything in supply planning

because disruptions happen all the time in humanitarian supply chains. Red Cross are investing in inventory and human resource to be in case of emergency.

## 6.6 Structure

The theory suggests a responsive approach in humanitarian supply chains. The empirical data suggests the supply chain should be flexible and always have stock available. These are some of the statements supporting that approach:

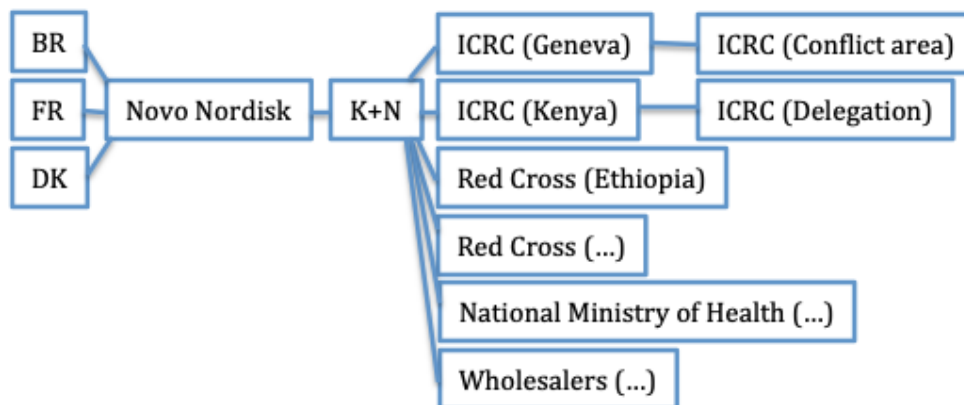
- *“Have products on stock always (due to poor infrastructure and poor information systems.) Try to control demand all the time. Share the information in the system with everyone. Good human resources and flexible.”* (Mohammed, 2019)
- *“Secured Cold Chain, Fully traceable with order quantities adapted to the needs/consumptions in the country. Besides, and considering our very low score at forecasting, availability is key!”* (Artal, 2019)
- *“Good system supply chain has to be set up. Users are inconsistent they really need to be trained and all more consistent. The system has to be consistent everyone in the chain.”* (Hailu, 2019)
- *“Service level 100% is a must - the children need the insulin, it can be life threatening.”* (Nielsen, 2019)
- *“Regarding agile supply chain – they to get the goods as close to end user as possible. Then holding them at hubs until the demand comes. Integrity in the supply chain is important – due to traceability.”* (Arain, 2019)

### 6.6.1 Supply Chain network

The following model is based on the empirical data collected. The model shows the network surrounding Novo Nordisk focusing on East Africa and downstream stakeholders.

Novo Nordisk is the focal company in this network supplying insulin to East Africa. The channels are a mix of commercial, public and humanitarian. Kuehne + Nagel is the nominated forwarder for the African region. *“I think the relationship is really good. We have been partners for several years now. We are still working on the implementation of 4PL, but it will move us closer together.”* (Bøtcher, 2019)

Model: Network map of Novo Nordisk downstream supply chain



Shipments are mostly sending on prepaid terms giving Novo the responsibility of overseas freight. Most of the shipments going to ICRC conflict areas in the Middle East are first send to Geneva. Other shipments to ICRC delegations in East Africa are handled via ICRC's own Logistics centre in Nairobi. National Red Cross societies work independently from ICRC, and are receiving shipments directly from Novo.

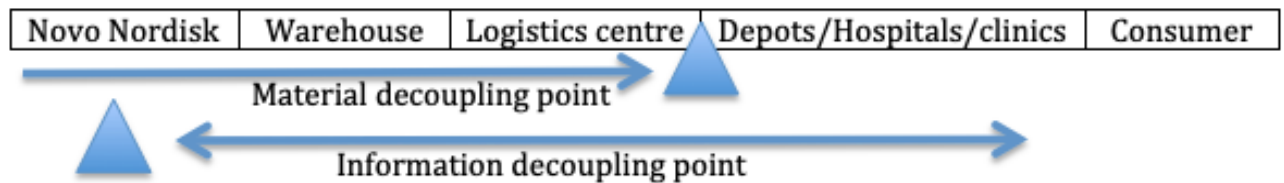
ICRC will only accept products from factory lines that are certified by EU regulations. Novo Nordisk mainly supplies insulin from three production lines: Denmark, France and Brazil. The Brazil factory shares the same regulatory as of Denmark.

The network inside Red Cross is very decentralized and looking from the freight forwarders position, the logistical structures in Red Cross is unclear, but insinuates to have all the right capabilities (Ethiopian Red Cross, 2019) (Rasmussen, 2019). The field offices might use local contractors while ICRC and IFRC uses different global forwarders (Pedersen, 2019). This means whenever Red Cross is in charge of the flow, they might use many stakeholders with little experience instead of using a single global contractor. Therefore Novo Nordisk should be in charge of material flow going into East Africa – because Novo has a sophisticated logistics structure with strong global partners.

### 6.6.2 Decoupling point

Both the theory and the empirical data dictate that material stock should be placed as far downstream as possible. In other words formulated as the decoupling point – where orders are meeting the material flow.

#### Model: Decoupling point for Material and Information



The model is a rough drawing of how the situation should be for Novo Nordisk. Information should flow in both directions when creating a collaborative relationship, and inventory should be placed close to the consumer when demand is very unpredictable.

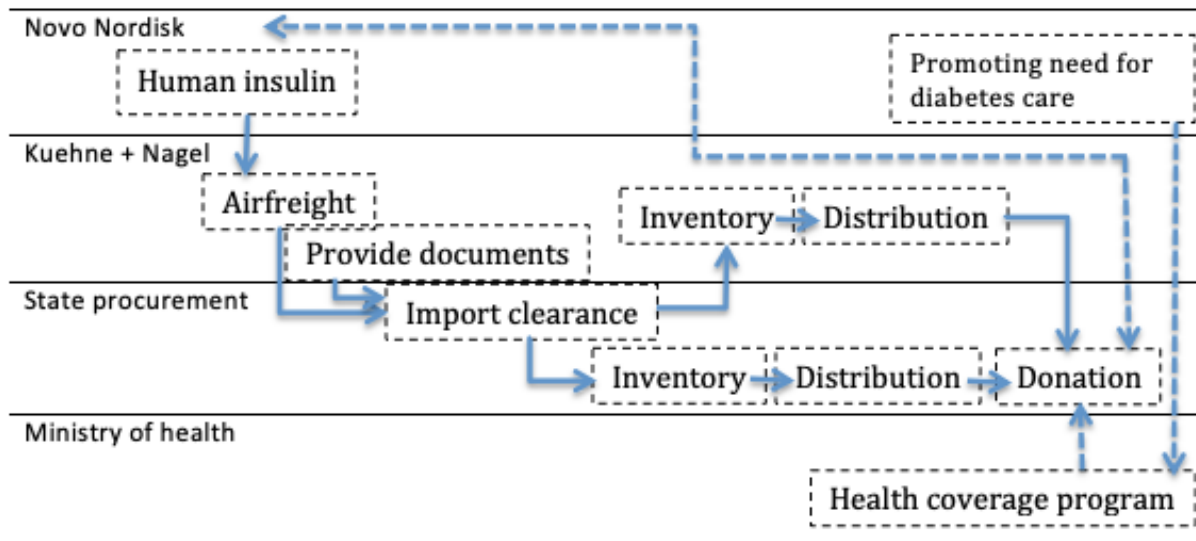
- First box is the Novo Nordisk production
- Second box is the Novo warehouse in Greve, Denmark – from where all shipments are prepared
- Third box is the logistical facility in the consignees country – could be Red Cross own warehouse or a third party logistics partner
- Fourth box are depots, hospitals, clinics, pharmacies, etc. – the final handling point before delivered to the patients/consumer
- Fifth box represents end-consumer

The material decoupling point is placed somewhere in between of: central warehouse location in the country vs. decentralised locations across the country. It is very much depending what the geography demands of the location and if the infrastructure is good enough to keep it centralized. ICRC is only using one location in Ethiopia and Kenya. The national Red Cross is using more locations. It is a good idea to keep a central stock since the Red Cross distribution network in general are quite flexible – but still have a few smaller locations in areas that are difficult to reach. In Kenya for instance – Novo Nordisk is working with the hub & spoke principle to reach some of the rural areas. The main 9 locations are supplying insulin out to approx. 20 clinics in the local communities (Nielsen, 2019).

#### 6.6.3 Swim lane process map

With the swim lane process map it is possible to visually distinguish different tasks and responsibilities in the chain of events. For the particular use, the process maps show some of the main tasks placed in downstream activities. The models are created based on the interviews made and the reality might look different.

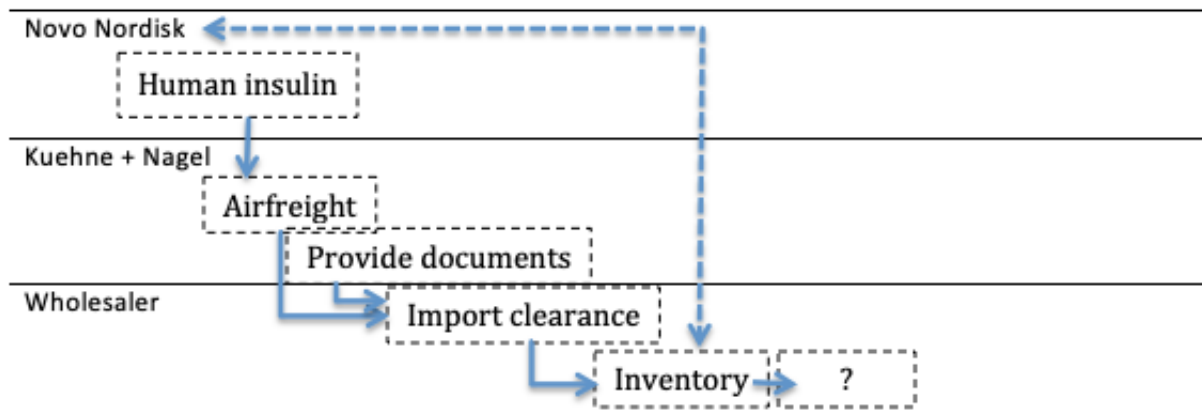
The first map is based upon the Novo Nordisk children program CDiC. In this program Novo is mostly in charge. The straight arrows represent physical movements and the dotted arrows represent the flow of information.



First part is to produce the human insulin by Novo Nordisk. Next shipments will be prepared for Kuehne + Nagel to transport via airfreight into the capital airport i.e. Nairobi (Kenya), Addis Ababa (Ethiopia) and etc. K+N provides all documentation together in one pre-alert to the import broker. In this case it is slightly unclear the state procurement department will accept importing the insulin, or if Novo has to use a wholesaler to submit as importer of record – it might vary from country to country.

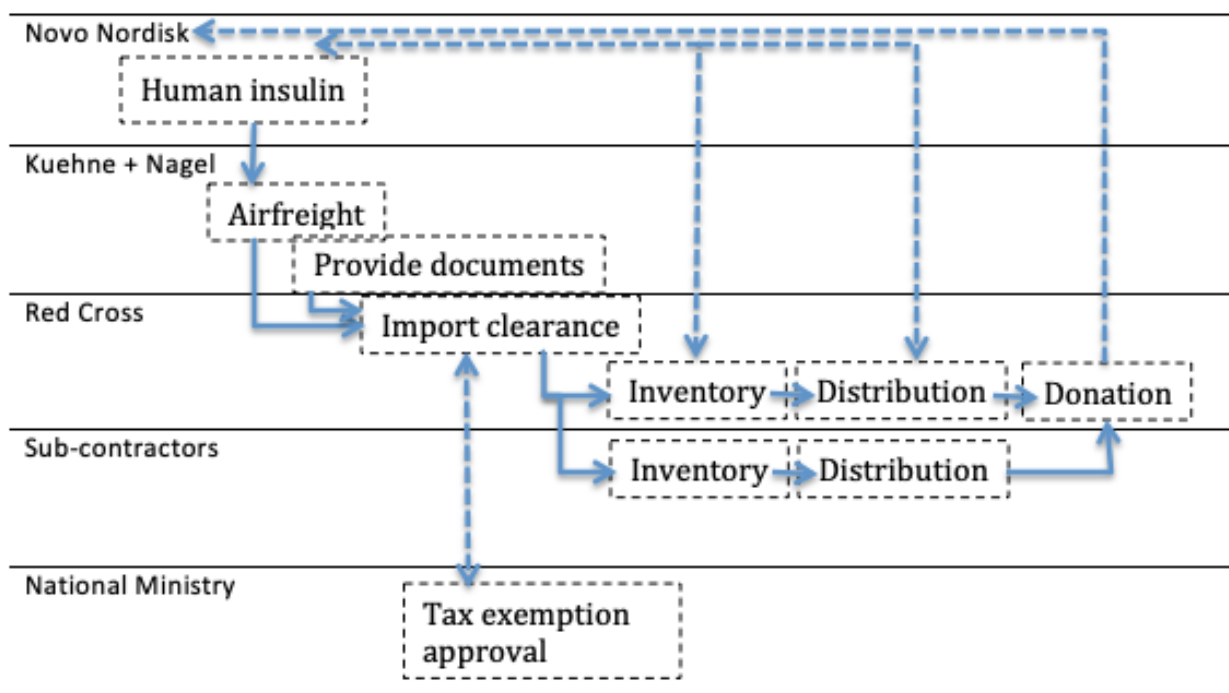
The purpose of course is, that the state department accepts the importation free of tax, since the insulin will be given for free to children. K+N is added on inventory and distribution tasks – this is purely idea basis, as it could be a solution to capacity problems if necessary. For instance in Kenya the state procurement of medicines has their own warehouses and distribution network. Ideally the flow of information should be shared from everyone downstream back to Novo Nordisk, because Novo has the parent responsibility of the program. But in the real world, that might be more difficult to have local governments corporate in sharing information. Even so, Novo and the World Diabetes Foundation (WDF) endeavour to make an impact on the governments to use more funds on diabetes care within their health programs.

This second map is showing the commercial channel that Novo supply. The processes are the same in the start, but the supply chain transparency ends at the wholesaler. Novo Nordisk monitors some of they customers to alert them when it's good time to purchase more insulin.



Novo compares the wholesalers stock with the historical consumption (Chong, Logistics Manager Novo Nordisk East Africa, 2019). The activities that occur subsequent to the inventory are not shared with Novo Nordisk.

In the third and final map is an analysis of the interviews made for this project. The map shows the processes intended in a new supply chain with Red Cross.



The first part is simple for all the maps. K+N creates a secure transportation link into the first airport in the East African country. From there Red Cross take over responsibility on importing the goods together with their own broker. But it can vary depending on what incoterms is agreed in the contract.

- CPT Terms: K+N arranges transportation only to airport.
- DAP Terms: K+N arranges transport to Red Cross warehouse and assisting with collecting the documents from the customs office.

Red Cross still need to be in charge of getting the import documents approved by the ministry. When products are intended for humanitarian purpose (not to be sold) the NGO can get an exemption on tax by the ministry. In most countries this mean that you physically need to go with the documents to the ministry to receive stamped approval. In practice this procedure is not that easy – K+N has experienced several occasions when the courier is waiting a few days in row to get the documents stamped (Harboe, 2019).

*“In General NGO’s do not have the right staff, they don’t have paper-pushers dedicated to make the paper work quickly and follow up with the ministries. There is No priority for the specific shipments. They need people dedicated to chase the Ministry for approval.” (Arain, 2019)*

Beyond any import constraints the final steps are; inventory management and distribution to diabetes clinics, hospitals and Red Cross pharmacies. The idea is that Red Cross share information along all the final steps, so that Novo can capture historical data in regards to their program and be able to assist in optimizing the processes and forecasts.

*“In order for Novo to create responsiveness together with Red Cross, I think your idea with DAP Terms and push strategy is good. It can give more control to Novo, but it also rely much on the degree of information sharing from downstream to upstream. In other terms: Supply chain governance. Also in terms of strategic stock – K+N can be an assist for Novo/Red Cross due to future expanding warehousing Nairobi.” (Bøtcher, 2019)*

#### 6.6.4 Kenya Ministry of Health

Novo Nordisk has been actively pushing the market players to lower the prices on insulin in Kenya. This has worked for the most part, but in general the Novo representatives in Kenya has been doing a really good job. Also by pushing diabetes on the agenda at the Ministry of Health, because no one

should die of diabetes, especially not children with Type-1 diabetes. The children with Type-1 diabetes didn't have a choice and are now dependent on getting the insulin to stay alive.

Very recently the extensive pressure from Novo Nordisk and other organisations such as the World Diabetes Foundation has finally come with a result. The Kenyan government decided that every people in Kenya should be able to get insulin for free (Rasmussen, 2019). This is a really good result for the cause and the Kenyan government could become a potent buyer of insulin for Novo Nordisk. But on the other hand this is bad news for the commercial customers of Novo, because they might sit with an inventory they cant sell for profit.

At this point it is still unclear how the government wants to structure this intervention and how it will work in practice. Do they have enough power to serve the entire country? KEMSA (Kenyan medical supplies authority), which is the medicine national distributor a department in the ministry, should have the better network in country (Arain, 2019). This means for the time being an agreement with Red Cross in Kenya alone would not be necessary.

- “The issue is: decentralizing health care to the counties, they are not equipped to handle it on their own. It is always a problem to decentralize health care. The government try to roll out a “Universal health coverage package” – so all people in Kenya can have access to health care, but it needs a lot of communication to work. I feel it can be difficult with lacking information sharing and too little funds.

*Close collaboration with the Ministry of Health works fine. Especially in Kenya the Ministry of Health prioritize non-communicable diseases (NCD), but the movement are still lacking funds. Some countries in the East Africa don't prioritize NCD really. It can be difficult to influence the governments in some countries.” (Strandgaard, 2019)*

## 6.7 Drivers

Even though Novo Nordisk is not physically involved in the downstream activities, it is still necessary to understanding what drivers are important to reach the desired performance level. If Novo wants to invest in humanitarian aid and in the same time would like to have some kind of control, they need to know what is important in these drivers. Nonetheless to create mutual understanding from both parties on how the supply chain works.

### 6.7.1 Opportunities and Threats

The following table are bullet points of opportunities and threats in connection with the six drivers in the framework.

	<u>Opportunities</u>	<u>Threats</u>
<b>Facilities</b>	<ul style="list-style-type: none"> <li>• Movable cold storage reefer containers</li> <li>• K+N/DHL Excess capacity</li> </ul>	<ul style="list-style-type: none"> <li>• Terrorism</li> <li>• Power shortages</li> <li>• Backup power generator malfunction</li> <li>• Cold storage malfunction</li> </ul>
<b>Inventory</b>	<ul style="list-style-type: none"> <li>• High undiscovered demand</li> <li>• K+N/DHL competitive storage cost</li> <li>• Flexible capabilities and safety stock</li> </ul>	<ul style="list-style-type: none"> <li>• Uncertain demand, impossible to calculate safety stock</li> <li>• Obsolete stock due to high forecast</li> <li>• Capacity constraint</li> <li>• Foreign currency shortage</li> </ul>
<b>Transport</b>	<ul style="list-style-type: none"> <li>• Countries improving airport, roads and harbour capabilities</li> <li>• UNHAS/WFP Airplanes</li> <li>• Lease driver/cold truck from freight forwarders at competitive variable cost</li> </ul>	<ul style="list-style-type: none"> <li>• Political instability can become a barrier on importing goods</li> <li>• Airplane crashes</li> <li>• Airline strikes</li> <li>• Drivers not allowed in to an area due to riots between clans</li> <li>• Disruptions in the cold chain – warm conditions</li> </ul>
<b>Information</b>	<ul style="list-style-type: none"> <li>• EDI/shared information system between Novo, Red Cross and K+N</li> <li>• Increase information sharing with use of cell phones</li> </ul>	<ul style="list-style-type: none"> <li>• Bad internet connection</li> <li>• Governments shutting down the entire communications network</li> <li>• Governments tapping phones</li> </ul>
<b>Sourcing</b>	<ul style="list-style-type: none"> <li>• Conspire air solutions with UNHAS/WFP</li> </ul>	<ul style="list-style-type: none"> <li>• Capacity constraints in Novo facilities</li> </ul>

<b>Pricing</b>	<ul style="list-style-type: none"> <li>• Pushing market prices on insulin to the benefit of the patient</li> <li>• Government price regulation on medicine</li> </ul>	<ul style="list-style-type: none"> <li>• Cheaper alternatives from competitors</li> <li>• Sudden change in tariffs and import tax</li> <li>• Tax exemption denied</li> </ul>
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### 6.7.2 Facilities

Novo Nordisk and Red Cross can increase responsiveness by increasing the number of locations, increase flexibility, or increase capacity.

Sometimes when ICRC have capacity constraints, Kuehne + Nagel assists with holding the insulin in Denmark and ship it in smaller quantities when it's needed (Kastberg, 2019). The relationship has a good structure, but is still at an arms-length and frequency of interactions is few.

An opportunity would be to partner with one of the strong freight forwarders in the region i.e. DHL or Kuehne + Nagel. These companies have strong capabilities in warehouse and inventory management. As an alternative they would also be able to provide flexible storage units such as reefer containers - it works as a moveable cold storage.

As mentioned earlier, ICRC has a facility in Nairobi that serves other ICRC delegations in the region. This facility is not used by the national Red Cross society, but it gives a picture on how one operation looks like. ICRC has around 3000 square meter of warehouse space for medical equipment and additional medium size cold storage rooms. These cold storages would normally look like those in the back of a supermarket in Denmark, which typically can hold around 5-10 pallets (Mohammed, 2019). Besides from the medical area they also have warehouse space for other commodities. The ICRC logistics centre in Nairobi is the second largest facility in ICRC (ICRC Delegation Nairobi, 2014). The logistics centre in Nairobi looks similar to the centre in Geneva - just bigger. See pictures of ICRC Geneva in appendix 3.

The Ethiopian Red Cross society has around 42 pharmacies across Ethiopia serving a large number of people (Ethiopian Red Cross, 2019).

In comparison this is the size of Kuehne + Nagel Nairobi: 11.700 square meter of warehouse space including 250 square meter of cold chain space. This facility is used to serve UNICEF with their operation in East Africa - mainly in Somalia and South Sudan. The warehouse is located close to Jomo

Kenyatta Airport in order to have rapid dispatch of shipments whenever needed by UNICEF. UN used to have several locations in Somalia as well, but due to raids from al-Shabab they had to close (Arain, 2019).

### 6.7.3 Inventory

Inventory affects the assets held, the costs incurred, and responsiveness provided in the supply chain. Novo Nordisk does not hold any finished goods inventory. When products are finished, it will be prepared for dispatch at the main warehouse hub in Denmark. From here Novo wants to push out finished products as quickly as possible. Red Cross is holding finished goods inventory in various locations. In East Africa these locations are only a few and central for instance in the capital city of the country. A high level of inventory can improve the responsiveness in the supply chain.

Cycle inventory is the average amount of inventory that is used to deal with the demand, and depending on the level of demand uncertainty there has to be a safety inventory. In some occasions it is necessary to create a seasonal inventory, if for instance Red Cross or UN decides to do a diabetes intervention in one of the countries.

ICRC in Nairobi has a very small inventory of insulin, only to serve the patients that come to the hospitals. ICRC doesn't have any diabetes intervention, and it might take some time to expand in this area. But with other medicines and vaccines they try to calculate demand/forecast 12 months ahead, and always keep 3 months of demand in safety stock (Mohammed, 2019). ICRC in Ethiopia has the same approach and always keeps 3 months of safety stock (Hailu, 2019). ICRC in Ethiopia has a small insulin stock since they don't have any intervention at the moment, but they always purchase from foreign certified suppliers, as they are only allowed by corporate regulations to buy basic commodities locally such as bandages, paper and etc.

ICRC holds a large selection of products in the inventory; in comparison Doctors Without Borders holds about 80 % medical products vs. 20 % non-medical products, whereas ICRC holds 20 % medical and 80 % non-medical. The supply chain manager Ruben compared the business with Amazon in terms of inventory, but of course for humanitarian purposes (Artal, 2019).

Novo Nordisk uses three brands with human insulin for East Africa:

- Insulatard

- Actrapid
- Mixtard

These products have a shelf life of 30 months (Novo Nordisk, Novo Products, 2019) and according to the contract with Red Cross acceptable remaining shelf life is 75 % when purchased from Novo (Huebe, 2019). The shelf life is based on products being held at cold storage at all times. If the products are exposed to +55° C it will last for 7 minutes. If the temperature is exceeding 8° C rising up to 40° C it will last for about 128 minutes. If the products go below 2° C until -5° C it will last for 73 minutes, and if a pallet of products are placed in -15° C it will last for 17 minutes. So these products have high requirements to the way it's being stored.

ICRC intends to push for orders and demand data in well time before dispatching orders. But in general they have the capabilities to receive an order in Nairobi, packing, labelling, dispatch and delivery in Somalia within 2 weeks in total (Mohammed, 2019). An important factor to be able to dispatch shipments fast is to have excess capacity in human resource. ICRC tries to have flexible staff and make sure not to have any backlog in administrative work.

For Red Cross in Ethiopia it is very difficult to purchase the products they need, due to foreign currency shortage. Some of the Red Cross operated pharmacies has reported stock-outs because they can't purchase new stock from overseas (Hailu, 2019). Ethiopia has had this problem for many years, and hopefully the trend wont rise in the rest of the region.

#### 6.7.4 Transport

Transportation of products can impact the level of responsiveness in the supply chain – depending on the quality, route, infrastructure, mode of transport, etc. Faster and flexible transportation is more expensive but also have a high degree of responsiveness.

When transporting into East Africa, airfreight is the best option for insulin. The lead-time is short in respect to the limited lifetime of the insulin. But transporting products on temperature control is costly and would need a leading airline to carry out the shipments – because they have the right capabilities and direct flights. Below are some of the preferred carriers:

Airlines/Destination	Lufthansa	Brussels Airlines	Qatar Airways	Emirates
<b>Nairobi, Kenya</b>	5 weekly flights	None	3-4 daily flights	2 daily flights
<b>Addis Ababa, Ethiopia</b>	6 weekly flights	None	3 weekly flights	1 daily flight
<b>Entebbe/Kampala, Uganda</b>	None	6 weekly flights	10 weekly flights	5 weekly flights
<b>Kigali, Rwanda</b>	None	6 weekly flights	8 weekly flights	None

Sources: (Lufthansa, 2019), (Qatar Airways, 2019), (Emirates SkyCargo, 2019)

Some of these airlines might also use freighters too, and these freighters are not always direct connections but have several stops in a single journey. Lufthansa and Brussels would require a truck solution to feed the shipments from Denmark to Germany and Belgium. Qatar has two daily flights from Copenhagen and Emirates has one daily flight. Airliners in the Middle East have a central location to serve most of the world.

There are two ways of transporting the insulin:

1. Active cooling – when the products is packed in a special flight container, that is plugged into the aircraft and have it's own refrigerator.
2. Passive cooling – special storage rooms on the aircraft with temperature control, when the products are packed in cold-boxes with ice or dry-ice, the room is regulated to +2 to +8 degrees Celsius.

In theory it would be no problem to transport the insulin with sea freight, but the problem is still demand uncertainty. It is too risky to forecast demand based on sea freight, because the lead-time is so much longer, and the demand fluctuates every week. Kuehne + Nagel is still in the baby steps of transporting insulin to Africa via sea freight – it is important to have a highly structured set up, where the products are secure from any disruptions.

The supply chain is very reliable on third parties to deliver performance, in order for the insulin to reach the destination country. Threats such as airplane crashes and strikes can disrupt the connection to East Africa, but also very unforeseen events. Recent events of Boeing aircrafts have crashed and put

pressure on the airliners with several planes grounded. Also in recent years there has been personnel strikes from Lufthansa and SAS crew, causing a lot of pressure on the network.

Local authorities in the African countries can be a threat if they decide to hold back shipments, the reason for maybe inspection, tax exemption not approved, or other general delays in the system. Shipments being held back can at risk for heat exposure, if these are not handled correctly. *“Ethiopia is the worst case! Real laziness from my point of view – working morale is low. In many African countries are used to foreign aid and perhaps not so serious about it anymore. Routine priority. For instance Sudan is even more worse, since the state don’t want UN to help, if UN operates in i.e. Darfur region where the people is not following the state rules. The state will delay goods on purpose.”* (Harboe, 2019)

The infrastructure in East Africa is a negative factor on the transportation as also shown from the Logistics Performance Index (LPI). Shown in appendix 4 is the packing material for the insulin vials. A pallet contains a lot of vials and is very fragile to changes in temperature. Sometimes Novo packs these pallets with thermal blankets that protects against high temperatures. According to Red Cross Kenya for instance, they promised to have all the right capabilities in regards to the distribution (Rasmussen, 2019). ICRC always uses their own trucks to make sure shipments are distributed safely. For Somalia and South Sudan they have 2 own airplanes to get the shipments across the border from Nairobi, Kenya. Hopefully the airports, harbour and roads will be improved over time to give an overall better infrastructure performance.

As an example of a solid freight forwarder in East Africa: Kuehne + Nagel Nairobi over time has continued to expand its portfolio of services to better meet customers supply chain needs. Responsiveness to the customer needs even during civil unrest and service to hard ship areas. To ensure that help and support reaches its destination Kuehne + Nagel offers “one stop” service solution around the clock, tailored for emergency situations. Coordinated through a dedicated Dispatch Centre, Kuehne + Nagel Transport division has a fleet of:

- 30 Prime Movers
- 14 cars
- 12 refrigerated five-ton trucks
- Several lifting equipment in different location to suit our client’s requirements

### 6.7.5 Information

Good information sharing in the supply chain can improve the performance level. Rich information sharing is key in coordinating a humanitarian supply chain, and collaboration can help to improve workflow and processes along the way. It is important to determine if the system should be push or pull. With a push system the supply chain rely much on the forecasts, and with a pull system the supply chain rely much on all the stakeholders' performance.

Strategies to avoid bullwhip effect would be:

- Integrated systems or EDI solutions, to have live demand data shared between all parties.
- Consumption data put in the system immediately and shared in a common platform.
- Computer-assisted-ordering, if the stock level reaches critical point, the system activates an order.

*"In order to have more Traceability from the Novo point of view, maybe it is possible to implement Track and trace perhaps together with a strong freight forwarder in East Africa. In the future look on data stacking up to see how the delivery performance is." (Bøtcher, 2019)*

### 6.7.6 Sourcing

Managers decide if the sources should be responsive or efficient, and if the tasks should be performed in-house or outsourced. Novo Nordisk is focusing on their core business to produce insulin, and other tasks are being outsourced. Novo have been implementing 4PL with Kuehne + Nagel to outsource administrative tasks. Instead of using only a single freight forwarder globally, Novo has decided to use logistics clusters and nominated the forwarders in the different clusters depending on their performance. See appendix 5: the model shows Novo Nordisk supply chain in the top, in the middle are the 4PL function at K+N supporting with logistics management. K+N has the overview of all the transportation contracts Novo has, and executes the logistics orders according to those deals. This also means the K+N 4PL department has a high level of discretion and are isolated from the outside world, so trade deals and price catalogues are not leaked.

Novo is not involved in any distribution of insulin in East Africa – they only have a sales office in Nairobi Kenya that serves the entire region. Novo has 3 factories they use to supply East Africa: Denmark, France and Brazil. But the company is stretching the production capacity as it looks right now - this means a lot of components are transported back and forth to utilize the capacity. As Novo

implied this should not be of any problem and they try to prioritize Red Cross deliveries to secure steady lead-time.

Despite Red Cross using their own airplanes and trucks in East Africa, they could be in need of extra capacity in the future, if Novo up the game on diabetes interventions. A solution could be to negotiate a transportation deal with United Nations Humanitarian Air Service (UNHAS) that run the air service for the World Food Programme (WFP). UNHAS provides air services for the humanitarian community to remote and challenging locations. In doing so, it facilitates the implementation and monitoring of humanitarian interventions in numerous life-saving, thematic areas. UNHAS transported 570 passengers and supported 30 humanitarian organizations in December 2018. Almost half the service is done on behalf of UN and the other half is for various NGO's. (WFP Aviation & UNHAS, 2019)

#### 6.7.7 Pricing

The price affects the segments desire to buy the product. For humanitarian aid, Novo has decided to go for a long-term price agreement with Red Cross, in order to eliminate the price as a constraint. The goal is to donate insulin to the poorest people, so they don't have to consider the price element and get the change to survive.

#### 6.8 Implementation plan

As already discovered, Novo Nordisk has already made a signed contract with the global Red Cross organisation covering important first steps in future business. These are some of the points for Novo to consider while implementing further into East Africa:

1. Decide where to start, for instance Ethiopia - make sure to study the country culture on beforehand
2. Set up a meeting with representatives from ICRC, IFRC, Danish Red Cross - to discuss how to implement the contract in Red Cross national societies in East Africa
3. Set up a leading meeting with the National Red Cross, bring a representative from the Danish Red Cross, perhaps also ask a counsellor from the Danish Embassy to participate - to discuss strategy and alignment of expectations
4. Set up a "follow up" meeting - to discuss structure and drivers, walkthrough the capabilities to establish a clear picture of the National Red Cross. Remember to bring a logistics manager and a representative from Danish Red Cross to show seriousness

5. Station a representative from Novo, at the National Red Cross to assist with managing the operation, as a supervisor
6. Make sure to keep in contact and manage the relationship - keep in mind the African people are very social, and meeting not necessary need to be professional every time

*“When starting a new partnership, as you describe, one of the key words is Presence. Make sure to meet up often to discuss the process developing.” (Bøtcher, 2019)*

When moving into new relationships in East Africa, it is really important to study the culture well before. Because has shown in the section on Hofstede insights in East Africa, the culture is very different from what it is in Denmark. So what might take on one or two meetings to solve in Denmark, it might take several meetings of different kind in East Africa.

## 6.9 Discussion

When looking at the interviews done with Kuehne + Nagel and Red Cross, it is really debatable if the structure of Red Cross should be decentralized. The national Red Cross offices have their own budgets and own responsibility to choose suppliers. But from the looks of UN organisations a centralized approach might give a better flow in the supply chain. At least for some commodities it would make sense to centralize and not all commodities of course, since the inventory list is extremely long. For high value and large size commodities it would make sense to centralize procurement and logistics – this could be in clusters or globally from Switzerland. UNICEF for instance is controlled from their head office in Denmark and logistics is divided into clusters depending on where the forwarders perform best - very similar to the way Novo Nordisk is doing. Some would argue that ICRC, IFRC and the network of Red Cross societies should learn from UN and Novo to centralize.

## 7. Conclusion

Novo Nordisk core competence lies in production efficiency and therefor needs to have partnerships in East Africa. Important drivers such as facilities and inventory needs to be outsourced in East Africa, while some of the transportation should be controlled by Novo. Domestic transportation in East Africa is better managed by Red Cross or Kuehne + Nagel. The upstream strategy of Novo Nordisk is based on efficiency while the downstream strategy favours responsiveness in East Africa. The theoretical and empirical research suggests responsiveness and strategic inventory postponement as far downstream

as possible. This is due to the high demand uncertainty, poor infrastructure and long lead-time of the products.

The strategy for Novo Nordisk and Red Cross is to establish a close collaborative environment with rich information sharing. Novo has already made the contract with ICRC and IFRC, this need to be communicated and implemented with all the other Red Cross societies. While implementing the supply network with the local Red Cross, it is important for Novo to be present to manage the relationship, review drivers and processes.

These are some of the important opportunities to consider:

- Alternative cold storage facilities, such as moveable reefer containers or excess capacity at Kuehne + Nagel
- High insulin demand in East Africa not yet discovered, and possibility to push Red Cross and UN agencies for more diabetes interventions
- Improving mobile network and internet network will increase information sharing in the supply chain
- Future investments in airports, harbour, roads and rail will improve the infrastructure for the supply chain
- Governments implement diabetes care more seriously into their health care plan - Novo Nordisk can be first movers on national tenders

These are some of the threats to consider:

- High demand uncertainty, it is almost impossible to forecast accurately and forecasts change every week
- Competitive producer with local presence in East Africa, such as Julphar Gulf Pharma
- Political instability in the countries - potential threat to disrupt the supply chain
- Import license or Tax Exemption being denied by the Ministry for unpredictable reasons
- Countries negative financial account balance - can lead to foreign currency shortage, and therefore unable to purchase insulin from Novo Nordisk
- Terrorist attacks on trucks and warehouses is a threat of large quantities being raided

International Committee of the Red Cross (ICRC) operates from central locations inside East Africa. The main location of the region is based in Nairobi that oversees operation and keeps the primary inventory. Smaller locations in the different countries, often only one location in each country, keeps a minor inventory of the most essentials and carries out domestic transportation via own trucks. Having a good human resource and inventory located close to demand increases responsiveness.

Some of the concluding key words are: Novo Nordisk should try pushing the partnership with ICRC & IFRC into East Africa and influencing it towards a strategic partnership with mutual understanding. Novo should be aware of the high degree of demand uncertainty, therefore critical to create a solid relationship with an agile/responsive partner. Novo should have high involvement when managing and planning strategy, structure and drivers - in order to stay in control and have a good overview.

## 8. Outlook

It would be considerable in the future, to analyse the relationship between Novo Nordisk and Red Cross, when the collaboration is more mature. While executing the implantation plan and Novo works on growing the collaboration with Red Cross, make a field research with a deductive approach to bring the topic from this research and bring it to more in depth narrow look - for instance by focusing on one country i.e. Ethiopia or one area inside the country.

New study area would be to do a case study on Kenya, make a field research on how the Kenyan government intend to roll out the new health packages including free insulin for the patients. It would be interesting to see, if the state medicine department has the right supply chain capabilities to serve the population or not. I.e. the Ethiopian Pharmaceutical Supply Agency (ESPA) looks very professional and capable when reading articles on their website - but looking deeper to KPI's stock levels are not looking too good on diabetes medicine (EPSA, 2019). It would be interesting to do a field research on the capabilities of ESPA and also KEMSA in Kenya.

Another study area would be to do an inductive approach, make a field study to go more in depth with operation of humanitarian logistics in East Africa. To take a close look at ICRC, IFRC, Red Cross societies and UN organisations, to see what capabilities they have, and what it would take to roll out more diabetes interventions in the region. Last but not least with the inductive approach try to add knowledge to the existing theory on responsiveness by Sunil Chopra and humanitarian logistics by Marianne Jahre.

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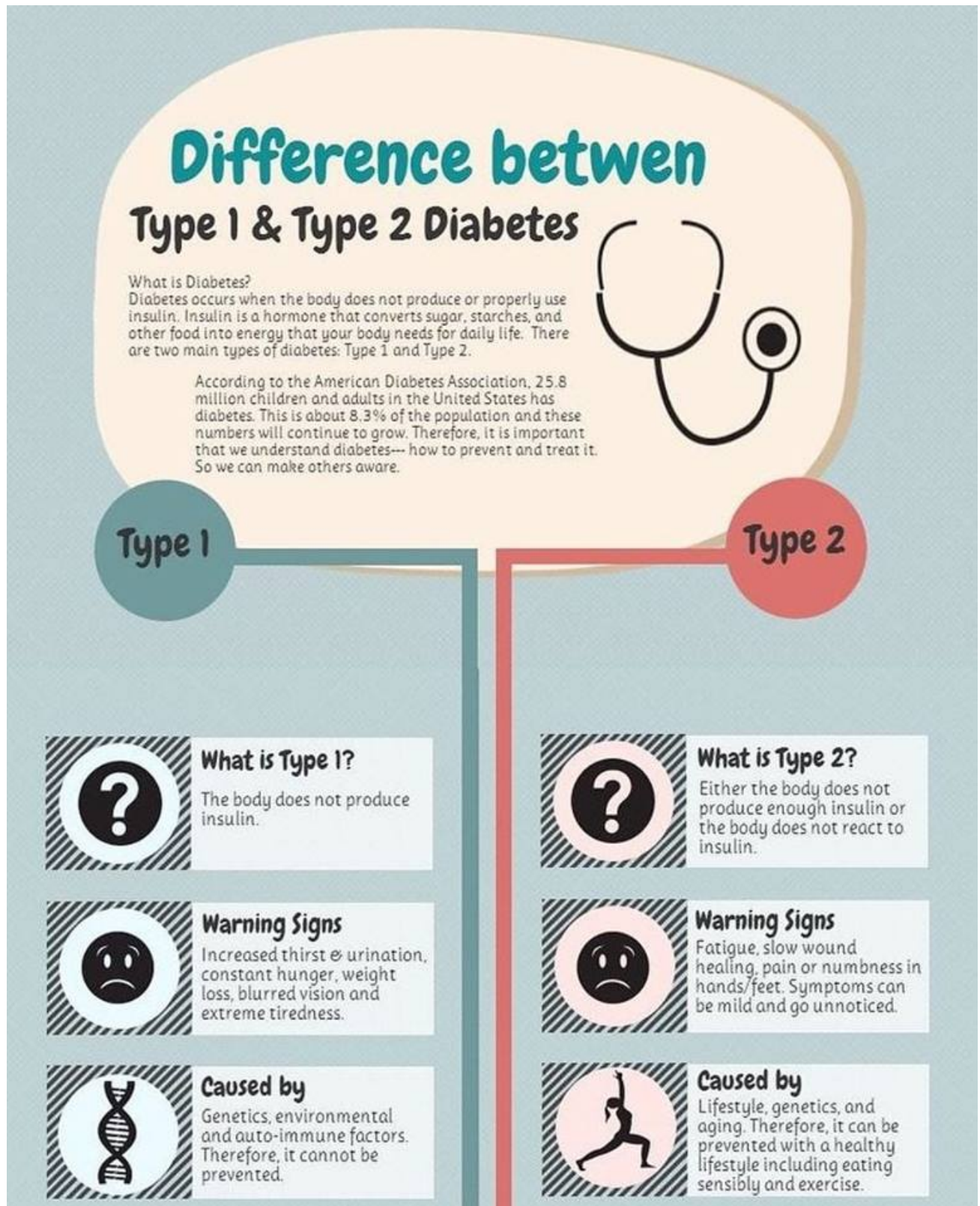
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## Appendix

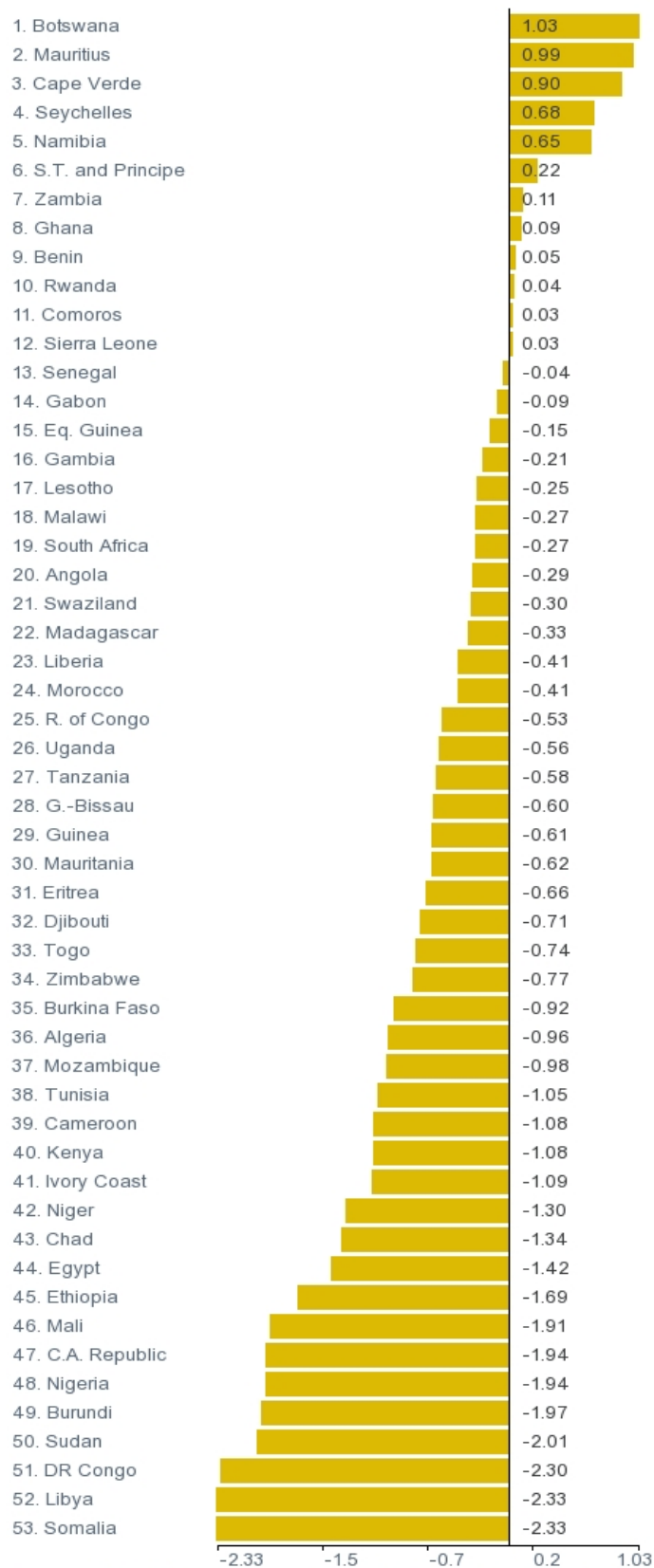
<b>Appendix 1 - Difference between Type 1 &amp; Type 2-Diabetes.....</b>	<b>82</b>
<b>Appendix 2 - Political stability index .....</b>	<b>83</b>
<b>Appendix 3 - Pictures from ICRC Geneva, Switzerland .....</b>	<b>84</b>
<b>Appendix 4 - Human insulin packing configuration .....</b>	<b>85</b>
<b>Appendix 5 - Kuehne + Nagel 4PL.....</b>	<b>86</b>
<b>Appendix: Meeting with Andre Harboe (Kuehne + Nagel).....</b>	<b>86</b>
<b>Appendix: E-mail questions with Rasmus Kastberg (Kuehne + Nagel) .....</b>	<b>88</b>
<b>Appendix: E-mail questions with Clause Hede Jensen (Novo Nordisk) .....</b>	<b>88</b>
<b>Appendix: Summary from Workshop at ICRC Geneva.....</b>	<b>90</b>
<b>Appendix: Meeting with Jane Rasmussen (Novo Nordisk) .....</b>	<b>94</b>
<b>Appendix: Meeting with Casper Pedersen (Kuehne + Nagel) .....</b>	<b>95</b>
<b>Appendix: Meeting with Mikkel Bøtcher (Kuehne + Nagel) .....</b>	<b>97</b>
<b>Appendix: Telephone meeting with Henrik Petersen (Danish Embassy in Kenya) .....</b>	<b>98</b>
<b>Appendix: Skype meeting with Ulrik Nielsen (Novo Nordisk).....</b>	<b>101</b>
<b>Appendix: Telephone meeting with Tariq Arain (Kuehne + Nagel) .....</b>	<b>103</b>
<b>Appendix: E-mail from Jane Rasmussen (Novo Nordisk) .....</b>	<b>106</b>
<b>Appendix: E-mail from Montse (Novo Nordisk) .....</b>	<b>107</b>
<b>Appendix: E-mail questions with Ruben Artal (ICRC) .....</b>	<b>109</b>
<b>Appendix: Telephone meeting with Mohammed Wehib (ICRC) .....</b>	<b>110</b>
<b>Appendix: Skype meeting with Jenny Chong (Novo Nordisk).....</b>	<b>112</b>
<b>Appendix: Telephone meeting with Hanne Strandgaard (WDF) .....</b>	<b>113</b>
<b>Appendix: Telephone meeting with Samuel Hailu (ICRC).....</b>	<b>114</b>

## Appendix 1 - Difference between Type 1 & Type 2 Diabetes



## Appendix 2 - Political stability index

Political stability index (-2.5 weak; 2.5 strong), 2017  
(points, Source: The World Bank, TheGlobalEconomy.com)



Source: TheGlobalEconomy.com, The World Bank, TheGlobalEconomy.com

### Appendix 3 - Pictures from ICRC Geneva, Switzerland



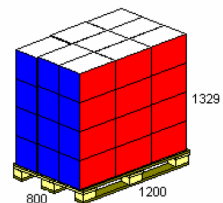
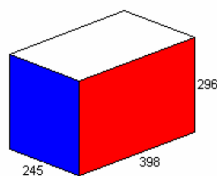


#### Appendix 4 - Human insulin packing configuration

### Human Insulin Vials Packaging Configuration

*English Neutral*

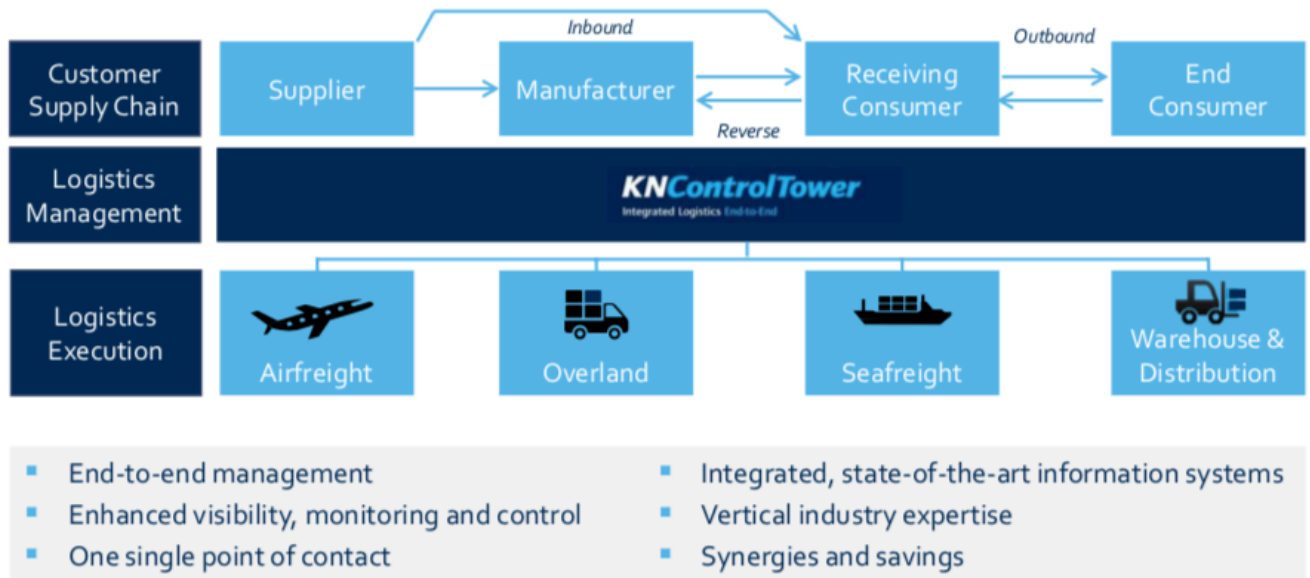
- Vial
  - Amount: 1
  - Gross weight: 0,025 kg
  - Dimensions:
    - 7,5x2,2x2,7 cm (0,000045m<sup>3</sup>)
- Shipper Box
  - Vials: 500
  - Gross weight: 16,25 kg
  - Dimensions:
    - 40x25x30 cm (0,03m<sup>3</sup>)
- Pallet
  - Shipper boxes per layer: 9
  - Total layers per pallet: 4
  - Total shipper boxes per pallet: 36



## Appendix 5 - Kuehne + Nagel 4PL

### Full supply chain coverage

#### Integrated Logistics



## Appendix: Meeting with Andre Harboe (Kuehne + Nagel)

Interview with Andre Harboe, Kuehne + Nagel, Aid & Relief Sea Freight Manager  
Week 4 – 1st of February

Working at KN for 22 years mainly with sea freight to Africa. 9 years as a shipping agent before KN.

Andre has been visiting Africa in many places with various UN problems situations – Kenya, Tanzania, Cameroon and a few other places.

Søren Christensen was one of the main actors in KN EX in Tanzania together with Finn Dahl back in the 90's. They began a lot of the operation. This was Spedition Dahl A/S before acquisition by Kuehne + Nagel.

*Our department has been working with Red Cross for more than 20 years.*

*Many of the NGO's is not so logistical minded, but has become better in the last years. They tender a lot of ad hoc shipments – mostly sea freight shipments. A Decentralized Red Cross (RC) means that many freight forwarders are involved with RC shipments. Problems often happen with documents not arriving in time at the consignee's desk and therefore Tax Exemptions not handled in proper time.*

*K+N tried to address this to RC in Geneva, but has not helped much so far.*

*RC has several global locations that ask for quotations – versus a centralized approach.*

*Typical procedure with sea freight is: DAP ex RC warehouse. RC does the packing of the containers and KN manages the transport. KN pre alerts stakeholders in the destination office. Finally RC is in charge of import tax procedure.*

*The main problem: RC offices in Africa can be slow starters. If not ready to search exemption when documents are ready. The process can take very long time. Several weeks we have seen examples of. Often because the office people are not logistical educated or proper trained in the various procedures.*

*Some places we have seen rotation in staff, so that the employees switch positions, instead of specializing in one area.*

*Second problem: corruption/bureaucracy regarding the tax exemption approvals. The state wants money for import goods.*

*If the product is on the list it helps a lot.*

*Some state employees will stall the procedure, because it gives no money. It is kind of the culture – they want money in the pocket and don't think so much about the social aspect – helping the poor people.*

*KN is not allowed to do exemptions; it has to be consignee needs to do it.*

*KN can pickup the docs with a courier to and from the Ministry only. KN could potentially help with fill out the documents, but will need the signature and stamp by RC.*

*You can meet situations where the courier sits at the ministry, to get docs stamped for several days, because they don't have time, or are out for lunch or not working that day. Patience is the real key here.*

*Ethiopia is the worst case! Real laziness from my point of view – working morale is low. In many African countries are used to foreign aid and perhaps not so serious about it anymore. Routine priority. For instance Sudan is even more worse, since the state don't want UN to help, if UN operates in i.e. Darfur region where the people is not following the state rules. The state will delay goods on purpose.*

*Documents in general, needs to be sent as fast as possible. Pre-alert quickly to consignee – to start the import customs quick.*

*Documents cannot change, if you use profoma invoices & packing lists, but also qty/packing specs may not change. Sea freight is different – you need the container number.*

*"Proceed for shipment B/L" document is when all is ready and delivered to carrier – waiting for departure – 3 days before. Final B/L comes back when ship is out – 3 days after.*

*RC in general doesn't consolidate so much. The departments don't speak together. We see a lot of LCL shipments from all over the world, so why not buy more from one region to utilize the container?*

*Cool goods we have seen before will be offloaded in warm conditions, and sometimes forgotten. Some places in Africa they don't know anything about handling cool products. I.e. Juba, Sudan.*

*Consolidate as much as possible to have less tax processes.*

*Could be a good idea if possible to create documentation before shipment is ready. Standardize the shipments in order to get green light quickly.*

*IFRC relation to KN EX – on sea freight – is very arms length, with little or none collaboration.*

*Decentralized RC budgets to the field offices means limited funds to get products or buy good transportation also.*

*Key problems: corruption, lack of logistics training in NGO's, start exemptions quickly.*

*We have also seen containers stuck in the harbour with bicycles (pre-owned) for the poor people – simply because the Ministry don't care much for Tax Exemptions. In this case it would be easier, if the value is really low, and then pay the bill for tax – it will release the shipments faster.*

*KN Mombasa has build a large warehouse and capable to expand.*

### Appendix: E-mail questions with Rasmus Kastberg (Kuehne + Nagel)

Questions for Rasmus Kastberg, Kuehne + Nagel

Operations Manager Airfreight Aid & Relief

E-mail questions 7-8 February 2019 – week 6

- How would you describe/map the ICRC's Supply Chain with K+N?

*ICRC procures insulin from Novo; K+N collects the pallets from the Greve hub approx. every 6<sup>th</sup> month. We keep the insulin in cold storage until ICRC is ready to ship out.*

- What tasks is K + N typical for?

*We mostly keep insulin in storage. Sometimes we repack the insulin into smaller quantities, so that it is easier to handle in consignee country. We have shipment approx. every 2<sup>nd</sup> month.*

*ICRC requires we use "Palletshippers" because they don't have cool trucks at the destination, at least the places we ship for them.*

- Can you describe how a shipment usually goes? Who is responsible for what?

*K+N is responsible for logistics and transportation to destination airport. We don't handle any procedures inside the destination airport – ICRC does that.*

- How does the daily contact with the ICRC take place?

*The contact is really smooth. We always get a warning about upcoming shipments – normally a plan for 6 month at the time.*

- How should the relationship with the ICRC be, to be optimal, according to your assessment?

*The relationship is fairly good. We have agreements for everything. They don't push for prizes or ask too many ad-hoc quotes. In my opinion this set up is working quite well.*

### Appendix: E-mail questions with Clause Hede Jensen (Novo Nordisk)

E-mail conversation week 6 – Claus Hede Jensen, Novo Nordisk Shipping Department

General questions on the business with ICRC

Question:	Under which Inco terms are the goods sold in the contract between NN and ICRC?
Reply:	<i>FCA Copenhagen (Greve)</i>  <i>DAP MEYRIN / DAP AMMAN / DAP KYIV</i>

Question:	(Under pretext of the previous question)  Who provides the transportation from NN warehouse to ICRC– NN or RC?
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Reply:	<i>FCA: Kühne &amp; Nagel Emergency &amp; Relief / Blue Water Aid &amp; Relief</i>  <i>DAP: (Blue water – contract expired) / K&amp;N / Neptun</i>
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Question:	What is the (typical) destination of the ICRC orders?
Reply:	<i>Most common in DAP Amman</i>

Question:	Can the contract/agreement between NN and ICRC be made available to us?
Reply:	<i>LTA available</i>

Question:	How will you describe the order flow between NN and ICRC?
Reply:	<i>Order received – Order placed with production – Order confirmed with delivery date – Order released – Order booked for flight/truck – Order shipped</i>

Question:	Can we extract order statistics, KPI reports from the system? Any data to show lead-time?
Reply:	<i>We can monitor lead-time from order placed to order released from Excel sheet.</i>  <i>Order picked from warehouse to order received will require manual search in each shipment.</i>

Question:	We have SAP access in NN. Can we get access and the opportunity to pull any reports?
Reply:	<i>We can pull reports from SAP in regards to normal functionalities</i>

Question:	Who is arranging the documents, in order to gain customs approval? NN, ICRC or RCK?
Reply:	<i>NN Shipping + QA is issuing all required documents;</i>  <i>Customs invoice / pack slip / Certificate of Origin: Shipping</i>  <i>Certificate of Analysis: QA</i>

Question:	Are you familiar with the purchase order flow from RCK? Or have you any experience with the ICRC channels? If so, how would you describe it?
Reply:	<i>Rather smooth process – we always receive PO from Sandrine Papazian</i>  <i>Not familiar with internal ICRC process</i>

Question:	How would you describe the daily contact with ICRC?
Reply:	<i>Very good cooperation with Sandrine Papazian who always revert in swift manner on any inquiry</i>

Question:	Do you do anything from NN to improve your relationship with ICRC?
Reply:	<i>We have streamlined and cleared our master data and anchored relevant customer related information in Customer Information Sheet.</i>

Question:	Which insulin does ICRC typically purchase? What is the expiry?
Reply:	<i>Human insulin vial + penfill</i>  <i>Actrapid / Insulatard / Mixtard 30</i>  <i>Shelf life: 30 months</i>

## Appendix: Summary from Workshop at ICRC Geneva

Date: Week 7 – 12<sup>th</sup> of February 2019

Location of meeting: ICRC Logistics Centre – Meyrin, CH (Close located to Geneva Airport)

Participants:

ICRC: Rudina Turhani (Business development manager), Ruben Naval Artal (head of supply chain management), Sandrine Papazian (Lead buyer of drugs), Rana El Baba (demand planner medical), Hind (supply chain planner (places orders to Sandrine)), Mirko (providing to Yemen), Stephanie (health innovation and partnership (works with Mia)), Thierry Fournier (Deputy Head of logistics), Didier (pharmacist at ICRC)

Novo Nordisk: Mia, Montse, Claus Jensen, Jesper Julius

Kuehne + Nagel: Claus Lindebjerg

Agenda:

- Video presentation of ICRC – helps in armed conflict areas. Supplying products and health care professionals. Impartial in treatment of the needed wounded by weapons. Emergency supplies, food and shelter. Local organizations around the world.  
Prison supervision to ensure minimal living standards is upheld.  
Assists in rebuilding homes and infrastructure. Giving the means to rebuild society.  
Orthopedic centers to assist people in getting prosthesis to regain (some) mobility.  
Neutral intermediate to solve hostage situations.  
Dependent on donations and external support from contributors.
  - Question: How long time is ICRC present in the conflict areas? It depends on the conflict area, but they stay as long as there is a need in the society. In average ICRC is present in an area for 36 years.
- Video presentation of NN – Pretty bland video presentation
- Pause: Ruben: ICRC has a very wide portfolio of products: Doctors without Borders has 80% medicine and 20% non-medical products. ICRC has 20% medicine products and 80% non-medical products. Ruben compared ICRC to Amazon in terms of product portfolio. Believes that humanitarian companies believes that they should learn from the Commercial world on how to create a more efficient supply chain

Thierry Fournier (Deputy Head of logistics) comes into the meeting

- ICRC in conflict zones – IFRC in disaster zones  
TF: Regarding Syria – Delivering on a certain number of sites. IFRC is delivering to the government. National RC is supposed to honor the contracts made by the ICRC. ICRC is not delivering to all national societies. Fem-net is a communication media used by the national societies.  
Montse: Why are the national societies sourcing from local wholesalers at a higher price, that what the NN/ICRC contract compromises.  
RT: Can NN supply i.e. Japanese RC with drugs?  
Montse/Mia: Yes, this is embedded in the current contract  
TF: We have not yet been discussing with the national societies on how to use the NN contract.  
RT: Not ready for this situation.  
The understanding of the contract is that the drugs were only to be used for humanitarian use. In Kenya you will have both national activities and external RC activities. Here it is important to remember that Kenya is regarded as a stable country.  
TF: We will need to find out on how to disseminate the contract with Novo Nordisk.  
NOTE: There was confusion on whether the NN/ICRC contract prohibited the procurement of goods to other needs that conflict-humanitarian. The answer was: There wasn't any limitation!
- TOPIC: What is the receiving process at ICRC? The goods stay at Novo Nordisk approx. 2 weeks after ready for pickup.  
There will be a benchmarking of the processes between ICRC and NN to improve the procurement processes.  
TF: There will be a person at ICRC to check all the national processes to make sure that they

are as efficient as possible.

SP: We place few orders for the warehouse in Geneva (without a humanitarian incident in mind = buffer stock)

- Libya orders quarterly (high specification need from Libya)

Deliveries are to clinics (run by Libyan RC)

Packed and shipped by K+N (invoiced to RC)

Claus: Novo is delivering directly to Libya ourselves in large volumes. NN is using a charter company to facilitate deliveries to Mitiga Airport (former military airport). NN is sending the goods in cold pallets with temperature loggers. NN uses thermal blankets.

Rana: most activities in Libya are being handled in Tunisia, due to the volatile situation in Libya. Shipping to Aden is done by ship (other side of the conflict)

- Yemen orders once a year. Shipped from Amman through RC own planes.

Claus: NN cannot get goods into Yemen through normal distribution channels.

Mirko: We send goods by commercial planes to Sana, Yemen. Goods are repacked in Amman and then send to the warehouse in Sana, Yemen. What happens afterwards is not known.

- Ruben: Can ICRC inform the national societies to order quarterly?

SP: It is sometime impossible due to local circumstances, which results in waiting time for up to several months.

Question: Can Novo stores orders for ICRC in the NN warehouses?

Claus: It would be difficult because the warehouses are focusing on maintaining a high turnover rate.

SP: Can NN store it 3-4 weeks for the Iraq orders?

Mia: It must be a case-by-case estimation if NN have warehouse space for ie. Iraqi orders.

- Warehouse problems in Amman, as it is full and don't have enough room for additional products.

- Claus is presenting the NN Order Process

- Most orders from ICRC are for Human insulin in vials – Which is made in Kalundborg. The order is being placed to the correct Production Planner (depending on the product). Usually it takes approx. 6-8 weeks from ordering to delivery – Currently in the later part of 8 weeks, due to production limitation issues.

NN is trying to force a prioritization for humanitarian orders, to keep the lead-time within the 6-8 week as promised.

Lt between production end and QA release: 1-2 days

NN have one shipping Hub (operated by DHL), which is one-stop-shop for distributors, and is a High Security Warehouse. Naturally it is a cold chain warehouse.

- ICRC has stock for emergencies, but delivers small quantity batch orders to i.e.

Lebanon and Kenya. Shipments are being mixed with other products, to optimize the shipment from an ICRC perspective, and from a transport consolidation issue.

- Shelf life for human insulin: 36 months – Stored in cold conditions 2-8° (question from Ruben)

- ICRC Amman is supplying Libya and Venezuela.
- ICRC represent a third of the humanitarian orders for Novo Nordisk. Handling flow is considered as unproblematic by the NN staff. Fast response and clear communication. One point of contact for NN towards ICRC, which is not the case for other humanitarian organizations.
- Major humanitarian partners for NN: WHO, IFRC, ICRC, UN
- Steph: How often do we procure locally?  
SP: Only when we cannot deliver from central warehouses or if the local requirements dictate local packaging, i.e. Ukraine  
Montse: What kind of languages do you require, as NN don't sometimes know how to designate the order, in terms of language on products? NN have local approval for specific language packaging, and it could be a solution for countries where we have an approval in.
- Didier (pharmacist ICRC) on the subject of Cold Chain Support
  - Talk about how the cooling equipment and packaging materials that NN provides in the shipment is meeting the needs of ICRC in terms of their handling, and forwarding activities. In general Didier explains that both the written material and equipment is sufficient for them to maintain the cold chain after receipt of the goods.  
Despite that the destinations is located in regions where the temperatures are very high, ICRC should have the equipment and knowledge to maintain the cold chain.
  - Only one incident where the cooling truck did not keep the engine running, when waiting at the border between Jordan and Syria. The wait took two days, and during all this time the truck engine where not running. Result was a loss of products worth 100.000 CHF.
- Dual Multiple Site Sourcing
  - Numbers for Novo Nordisk sites shipping to ICRC.
- Future collaboration
  - Increase in demand from Yemen, and a slight increase for Syria
  - General increase of demand for the rest of the year/contract
  - Streamlining of the demand for drugs between a number of NGO's: IFRC, ICRC, etc. (Stephanie)
  - Syringes are sourced locally in Geneva, but Novo could maybe supply syringes to ICRC (currently not in the product portfolio of Novo)
- 2019 Tender (ICRC)
  - Include Ukraine
  - Included: Neutral packaging in English
  - October is deadline for the new tender 2019
    - Tender extends for 2 years
    - The length may be extended, as patients would prefer the same medicine to be provided.

Notes from the tour inside the Logistics center:

- A lot of different products on the shelves
- All shelves was full of products
- High security warehouse – Known consignor
- Top high security medicine storage – only a very few people has access
- Medium size cold storage in the basement – only a few people has access
  - The cold storage looks similar to what small supermarkets use.
- The warehouse receives goods, checks the condition and puts to the shelves
- The warehouse packs shipments to conflict destinations
- Some shipments was still pending in the warehouse, because of missing green light from the destination to ship out the goods. Everything was packed and ready.
  - A large shipment was ready for Venezuela, but because Venezuela denied any Humanitarian aid, the shipment was stuck in the warehouse.
- Rana: We don't accept donations in product form only funds. Because when donators send products, we can't keep control of the quality – instead when we only get money donations we can select the best-certified suppliers, and we can keep continues control of quality with long-term contracts.
- ICRC always keep a large amount of funds in the bank, the money is kept ready for emergency when a new disaster happens – because one of the larges costs is transportation and logistics. To be agile we have to buy high quality transportation, and charter solutions too.

### Appendix: Meeting with Jane Rasmussen (Novo Nordisk)

Meeting with Jane Rasmussen – Week 9, 1<sup>st</sup> of March 2019 (Location: Bagsværd)

Other Participants: Montserrat Ugalde Huebe, Claus Hede Jensen

- Do you remember which clinics you visited?  
*State funded clinics - Changing Diabetes in Children program – poorest children (Ulrik Novo is the global manager)*
- The MOU contract with Red Cross?  
*It's a partnership agreement with ICRC and Red Cross (RC) Denmark, that means Novo Nordisk (NN) can apply this to whatever RC country, where there is a humanitarian setting.*
- Does NN have any employees in Kenya who run the daily/weekly contact?  
*Abigail NN Kenya, has the contact, and knows the current setting.*
- Which is better NN transportation or ICRC transportation setup?  
*Propose a DAP solution to RCK facilities in Nairobi. Push strategy.*
- Who will be maintaining the relationship with RCK?  
*Jane is visiting Kenya regularly in the start-up phase – Kenya Novo Nordisk will be running the operation in the future.*
- How new is the partnership with ICRC and RCK? How well is the relationship with ICRC?  
*The partnership with ICRC is strategic – on going for several years. RCK is a new relationship forming.*
- According to Claus, the past year has none NGO from Kenya purchased insulin directly from NN, why is that?  
*Clinics have been buying insulin from local wholesalers or KEMSA (procurement department from the Ministry of Health)*
- RCK arranging document approvals – what can we do to provide documents earlier?

*Claus mentioned it is difficult to extract invoice and packing list from the system, unless the shipment is actually ready.*

- Do you see an opportunity to enter the Kenya market in general, with the help of Red Cross? Spreading the word about Novo products?

*Novo see the opportunity for overtaking the control of the supply chain. "We see a broken supply chain, we want to create a better setup – for the clinics in the humanitarian setting".*

*Do RCK have the needed capabilities – yes at least they claim so.*

*We want to explore and understand the capabilities/operations RCK have, how they are working.*

*Making a general understanding about the new partner, how they are working.*

Current state:

*State clinic -> KEMSA (Ministry of Health Kenya) -> Insulin providers*

*State clinic -> Local wholesalers (commercial prices)*

Potential plan:

*Novo -> RCK -> state clinics (donate human insulin for free)*

## Appendix: Meeting with Casper Pedersen (Kuehne + Nagel)

Questions for Casper – Airfreight manager (K+N Aid and Relief)

Meeting in week 11 – Monday 11<sup>th</sup> march

Kuehne + Nagel:

- Have you visited Kenya, or another similar country?

*Been visiting several African countries regarding UN related operations and projects - mainly visited Tanzania and South Sudan. K+N started UNDP operations in Sudan, when the country had the election, and South Sudan became independent. K+N transported the ink and paper for voters. The base was in Juba airport with a warehouse and African operators with small cargo airplanes. Goods was flown in to Juba and distributed to all Sudan with small airplanes. That operation in Juba soon after became the main location for supplying Sudan on behalf of UN.*

- What kind of cold chain capabilities does K+N Kenya have?

*K+N have a large warehouse operation system with cold storage for UNICEF medicine supplies. The location in Nairobi is supplying vaccines for South Sudan and Somalia, primarily. UN wants to keep the products at stock in Kenya as long as possible, up until it is actually needed in Somalia – because UN don't want to keep any stock in Somalia (due to high value products) and rather only send small portions of medicine, when ever it is needed. This is the risk assessment they have done, and concluded that the risk is too high in Somalia of getting the products stolen.*

- How is the domestic transportation in Kenya?

*Check out online the LPI – logistics performance index and see how the situation is in Kenya.*

- How is the relationship with Red Cross? ICRC & IFRC?

*Actually the relationship is not so much; we get very few shipments in general. We think is this because the logistics is very decentralized inside ICRC – means that field offices decide on freight forwarders by themselves. There is not a clear logistics structure compared to UN (where processes are streamlined and clear to all parties).*

- What tasks are we performing?

*We are keeping a small stock of medicine products in Denmark, also insulin. Sometimes we repack into smaller quantities, so the shipments can be send directly out to the final consignee. But in general the operation is small-scale.*

- What have K+N Globally invested in Aid & Relief? Material?

*Kuehne foundation is a group of consultants that provide logistics/supply chain training for the humanitarian organisations.*

*K+N have invested in a logistics warehouse in Dubai, to support UN operations globally – in to support the responsiveness of UN.*

Humanitarian supply chains:

- Who would you characterize the ideal supply chain for insulin in Kenya, or an African setting in general?

*You need to be present, also physically, in order to gain control of the supply chain and logistics. Because if you are present, have someone of your own to oversee the processes, you can keep track. You need to involve the right partners with the right capabilities, in order to provide a fast responsiveness.*

- What are the challenges?

*Culture, local requirements, dedicated staff, unpredictable demand.*

1.Strategic:

- What is your view on supply chain structure - Responsiveness?

*Check out what is the value proposition from Novo Nordisk, what is the goal that they want?*

*What is the situation from Red Cross point of view regarding pricing? Are the products still cheap with this contract compare to generic products from i.e. India?*

*You need to find out how much safety stock that is possible to bear- in order to be 99% responsive to changing demand. What is the shelf life of the products and are they prepared to take the costs of potential obsolete products – as a trade-off.*

*Is Novo the only supplier or do the Red Cross have a broad supply base? What is the lead time and are the supplier flexible to meet change in demand or growing demand?*

*You need to consider having an emergency stock, if everything else is failing and safety stock is also gone, for some reason.*

*It is important to have the right human resource, that a willing to go the extra mile for the cause – ready to act fast. The people have to sit ready, in order to act on rapid changes in demand.*

*Consider moving towards a more lean approach in the long term, when you have gathered historical data. This way it can be possible to start working on costs saving in logistics and providing a more stable supply.*

- Culture?

*Take a look at the website with “Culture map”. Also take a look at the world’s corruption index to find out more about Kenya, where the country stands in corruption.*

2.Tactical:

- Forecasting?

*Take a look at GDP figures to get an understanding on the growth in the country. These general numbers can be used in your PESTEL analysis.*

*For these clinics, who are deciding what kind of medicine products they have to buy - does Red Cross or the Ministry of Health decide it?*

3.Operational:

- Local requirements – bonded warehouse – when should it be released latest?

*The IT network is okay, but in general really slow. Kenya is doing well in keeping up with technology. For instance the customs system is fully digital now, same as in Denmark, but of course with the exception of certificates that need to be stamped in the Ministry. Also the customs system has a huge problem, when the system breaks down. There are not any emergency procedures – so if your import declaration gets stuck due to a breakdown, you can only wait.*

- Cold storage facilities?

*K+N should be able to offer storage capacity to the Red Cross.*

*Try get in contact with Tariq from K+N in Nairobi.*

- Transportation?

*Nairobi has fine infrastructure, but the harbour in Mombasa is not really good.*

Follow up meeting:

Telephone Meeting in week 13 – Friday 29<sup>th</sup> march

- What is the UNICEF landscape?

*K+N has a global contract with UNICEF on logistics services. K+N then provides transportation to airport only.*

*Logistics inside the single African countries is regulated by a local contract between K+N and UNICEF.*

*UNICEF has their regional office for East Africa in Nairobi – controlling the operations from that location in cooperation with K+N.*

*K+N has been working with UNICEF for several years.*

- Are KN managing inventory for UNICEF in Nairobi, and how?

*K+N has a large facility in Nairobi that provides dry storage and cold storage for UNICEF. Some products are also kept on customs bond – because UNICEF wants to hold back high value products, right up until demand occurs. This solution is particular for South Sudan and Somalia due to the high risk in the country. Also to ensure the cold chain is kept and no disruptions along the way.*

- What kind of transport modes?

*For South Sudan we have 3 weekly flights from Nairobi.*

*For Ethiopia we supply vaccines directly from Mumbai to Addis Airport.*

- How is the product kept cold at all times?

*Cold storage at the Nairobi K+N warehouse.*

- Have you any experience with Ethiopia?

*In the past it was dictatorship like situation. Phones were being monitored and you couldn't know if you were being listened. The government had the power to turn off all IT networks if they needed to, for instance if there was riots forming – they would turn off the phone network and Internet to minimize the riot growing. But I am not sure if it is the same today.*

## Appendix: Meeting with Mikkel Bøtcher (Kuehne + Nagel)

Questions for Mikkel Bøtcher – National Development Manager

Meeting in week 11 & 14 – Thursday 14<sup>th</sup> March & Tuesday 2<sup>nd</sup> of April

Kuehne + Nagel:

- What kind of cold chain capabilities does K+N Kenya have?

*The capabilities has become really good. The warehouse is supporting a lot of UN operation in Somalia. The KN location in Nairobi wants to expand the business to other pharma customers as well.*

- What future projects to create pharma chain logistics in Kenya?

*Already present, trying to expand capacity.*

- How is the relationship with Novo?

*I think the relationship is really good. We have been partners for several years now. We are still working on the implementation of 4PL, but it will move us closer together.*

- How is the landscape with the other Forwarders? DHL, K+N, Expeditors.

*The Novo business is divided into clusters.*

- What have K+N Globally invested in Pharma Chain?

*KN has invested a lot in pharma chain in past few years. We have set up a lot of new warehousing and invested in many cool trailers in Europe to cope with demand inside EU.*

- How would you characterize the ideal supply chain for insulin in Kenya, or an African setting in general?

*You need to have; The right partners in cold chain, traceability, monitoring, good cooling facilities, etc.*

- Supply chain structure?

*In order for Novo to create responsiveness together with Red Cross, I think your idea with DAP Terms and push strategy is good. It can give more control to Novo, but it also rely much on the degree of information sharing from downstream to upstream. In other terms: Supply chain governance. Also in terms of strategic stock – K+N can be an assist for Novo/Red Cross due to future expanding warehousing Nairobi.*

- What is the general Novo Culture about humanitarian aid?

*It has very much become embedded in their strategy – they want to use their core competence to help the poor.*

- Implementing a new partnership?

*When starting a new partnership, as you describe, one of the key words is Presence. Make sure to meet up often to discuss the process developing.*

- Information sharing?

*In order to have more Traceability from the Novo point of view, maybe it is possible to implement Track and trace perhaps together with a strong freight forwarder in East Africa. In the future look on data stacking up to see how the delivery performance is.*

## **Appendix: Telephone meeting with Henrik Petersen (Danish Embassy in Kenya)**

Questions for Henrik Petersen, Danish Embassy in Kenya

Week 11 – Wednesday 13<sup>th</sup> March 2019

*The Danish embassy has a close collaboration with Novo Nordisk in Nairobi.*

*The Danish embassy in Nairobi is the largest Danish department in all of Africa, with 50 employees which of is 13 people from Denmark. Typically the Danish diplomatic are in the country for about 4 years.*

*Henrik has been in Nairobi for 3,5 year – working as Export assistance in Kenya supporting Danish companies to enter the market.*

*DANIDA is the corporate instrument helping companies and state – current running a DK – Kenya country program until 2020 – with total donations of 5 billion Danish kroner in a total period of 5 years. The program is helping to improve the health sector – expanding of capacity, training, etc. The Danish embassy knows about Red Cross Kenya, and what they are doing in the country. But the Danish don't work together with Red Cross.*

*We have been touring with Novo, in the autumn, to visit several BOP locations that Novo has set up. Novo has been handing/donating out insulin for free to the poor kids. Novo Nordisk together with WDF have set up 3 major centres in Nakuru, Mombasa and one more place I don't remember. They call it the Centre of Excellency.*

*Kenya has 47 counties – the government sends out money to the county for them to manage.*

*Is Red Cross going to supply private hospitals or the public sector?*

*In general it sounds like a good project, to work with Red Cross – for them to bring out the insulin (donations). Red Cross Kenya has a known quality in distribution.*

### **Government:**

- What is the role the Ministry of Health, when importing medicine in general?

*The Ministry is in charge of what medicine is procured to the public sector. Also the ministry is granting license to import the medicine products.*

- What about when importing for humanitarian purpose? I.e. Red Cross. Is there a higher priority?

*Not really, due to the Tax Exemption, which the ministry is not happy about, since this means less money for the state. But on the other hand, Red Cross is a well-known organisation by the government – so they should not have too much trouble, and the procedure should be more routine.*

- What is the role of KEMSA in general regarding medicine?

*KEMSA is part of the Ministry of Health. KEMSA has the leading responsibility of supplying medicine to the public hospitals for the whole region.*

- How good is KEMSA of supplying the region with the medicine they need?

*I think KEMSA is quite good, no problems in general. But for programs run by Novo Nordisk, it can be difficult to have transparency. When Novo sells the products to KEMSA, all control is left by KEMSA.*

- Do KEMSA give out free medicine to poor people?

*No. The counties have their own funds given by the government. The county has to manage, what medicine they can afford to buy. In order to buy medicine for the local county hospital, the county places an order to KEMSA.*

- How is the normal procedure, if a poor child comes to the hospital with diabetes, and needs insulin care?

*The children is meeting at the diabetes clinic, mostly centres set up by WDF and Novo. The children gets diagnosed and treated – most of the times the families cant afford the medicine, but Novo has been donating a lot of insulin to children.*

### **Culture:**

- How is it to do business?

*Corruption is very widely spread in business. Mostly in the public sector. This also means that the companies from Denmark that we support often collaborate with private companies and not the public sector – in order to avoid corruption.*

*Novo Nordisk is a big player in Kenya. Novo has been working with various organisations about distribution of insulin – also religious organisations. One of the reasons why Novo is big in Kenya, they have moved their office from Dubai to Kenya.*

- Working hours?

*Normally 40 hours a week, but not necessarily from 9-17. Some workers also work odd hours to earn extra money.*

*Foreigners have difficulty to get working permit in Kenya, since the government wants to have as many Kenyan people working as possible.*

- I have heard from my colleagues; when they need to go to the ministry to get the documents stamped – it can take all day, or several days in a row, just waiting. Can you confirm this experience?

*Yes, it really depends if the Ministry have time or not, or if they think your document is not important.*

### **Legal:**

- How is the procedure (i.e. Red Cross) to get a “Tax exceptions” approval to import insulin products?

*The products imported must only be for donations. It is not allowed to sell.*

- How long is the typical process time, before approval?

*Should be routine for Red Cross. The Ministry is re-evaluating the Tax Exemptions very often. Since I said before, the bureaucracy is considering all the time, if it's okay to allow the exemption – because it means there will be no money for the state. The ministry wants to earn money for the country.*

- It is necessary to get stamps for every single shipment?

*Yes. Even though the import customs system is not fully digital, shipments have to be inspected every time. I think for Red Cross these procedures should be pretty routine stuff.*

*For other organisations it might be harder – I have seen processes taking from 1 to 10 months, to get a Tax Exemption approval.*

### **Economics:**

- How is the country wealth in general?

*Fairly reasonable growth around 5-10 %.*

- Is there any progress in wealth growth?

*Yes getting better, but unfortunate the gap between poor and rich is also getting bigger. The rich people feel that the poor should stay poor, in order to have power/control on the population.*

- Are the poor people getting more support in the future?

*Not really any programmes/projects in the scope, as far as I know. Many young people have no jobs, so it is very much up to individual ingenuity/innovation, to find ways to earn money. Mostly whole families 5-10 people rely on 1-2 persons earning the money for all. It is really important, when you have a job, to stay healthy and work hard.*

- How is price setting, in the private sector, regarding medicine?

*Free pricing - It is a free market – no regulations compared to Denmark. Some of the large pharmacy chains might have standardized prices for all the stores. Also the currency will affect the prices – the Kenyan currency is linked to the fluctuations from the US Dollar.*

### **Technology:**

- How well are computer systems in general?

*Kenya has well IT in general. Computers are widely used by companies, but the Internet access can be slow sometimes. We have power shortage from time to time.*

*Convenient payment app (M-Pesa) on smartphones has been introduced, similar to Mobilepay in Denmark.*

- Are majority of people sharing information via computer, phone or letter?

*Almost the whole population owns a cell phone, but smartphones is very expensive.*

- Do you see the phone as a tool for information sharing in a supply chain, for instance inventory checks, or restock orders?

*Most likely, Primarily used for information sharing – orders, stock levels, etc. is send by E-mail. More procedures will become more digital in the future, implementing ERP systems or similar.*

*The government is in the process of implementing a Patient Management System in the public sector – something similar as we have it in Denmark.*

### **Infrastructure:**

- How well are the roads in the poor areas?

*Very poor and dangerous in nights. Kenya has been introducing new routes by train – also cargo trains. The road from Mombasa to Nairobi is called the “Death Road”.*

- How well are the trucks and vans used for deliveries?

*Deliveries to the various counties are most likely done by vans – cooling vans for medicine. In fact the clinics/hospitals in the counties has rather good coolers, but small. It is similar to a chest freezer that you see in normal Danish homes. The freezers was donated by UN and supplied by Vestfrost.*

- For instance Google maps say the route Nairobi to Mombasa is 7,5 hours. What is realistic the true lead-time for cargo flow?

*Way more time than that. It is becoming more common to send freight by train from Mombasa.*

- Do you have another example, with the delivery lead-time to poor towns?

*If we are going to a meeting in the centre of Nairobi, it takes 1,5 hour to drive in, and same time back out. If we are going to longer distance to visit counties, it is much better to fly.*

#### Environments:

- What is the general threat from Somalia or other neighbour countries?

*Al Shabab the Somalia terror group crosses the border from time to time. They raid what ever they can find, sometimes randomly, but mostly goods that is easy to sell. Al Shabab also does attack Nairobi, but not so often that we think about it.*

### **Appendix: Skype meeting with Ulrik Nielsen (Novo Nordisk)**

Questions for Ulrik Ulldall Nielsen, Novo Nordisk, CDiC Manager

Skype meeting – week 12 – Wednesday 20<sup>th</sup> of March

Also participant: Montse, Novo Nordisk

Ulrik is working at Novo Nordisk – Manger for the CDiC program (Changing diabetes in children) for 7 years. He has type 1 himself and been using insulin for 32 years – So he is capable to share he's story with the children when he's on tour.

*The CDiC program is entirely funded by Novo management/executives. The program is created to support children with Type 1 in the poorest settings in the world. In 2012 Kenya was last country in the program. The program now covers 14 countries in various settings.*

*DMI is the NGO in Nairobi supporting with the CDiC – implementing the program (normally this is in collaboration with the government or Ministry of Health). But DMI had the better knowledge and capabilities to do this. DMI still works very close together with the Ministry. 300 children is enrolled in the DMI centre in Nairobi.*

*Cost with insulin alone is not so heavy it is the different costs involved with it that is heavy.*

*For the moment, where Novo donates the insulin for free to children, we pay tax for the products to donate, what I find frustrating – we are really looking forward to the advantages that RCK has – also we would use Tax Exception instead to leave out Tax.*

*Abigail is the one in charge – handling CDiC in Kenya.*

*Ministry of Health generally applauding the method we are trying to establish.*

*RCK has the right capabilities, so Novo hand it over to them for a more sustainable solution for the future.*

*RCK patron is the Kenyan president – that hopefully helps with getting the right mandate to operate.*

*So to sum up, what is our drive, goal and purpose of the program - Go in and build up the system, hand it over to RCK for sustainability. In general RC and UN working with children in diabetes it creates much more focus on the cause.*

*Funding to DMI is primarily by Novo and WDF, originally WDF made a fundraiser to begin off with. Funding is allocated to the clinics.*

*We heard stories about some children were stealing insulin from stores – we want to prevent that from happening. There should be zero reason for the children to steal insulin, when they can have it for free from RCK/Novo.*

*The children get insulin for free and 4 strips a day to check blood sugar. The children simply need to bring an empty vial to show the need for more insulin.*

*The idea is to have RCK donate the insulin in the future by 2020 – which they can procure from Novo at really low prices.*

*If RCK will need funding in the minimum way Novo would be able to support, if really necessary. Why we want to use RCK because they are more cost efficient.*

*We only use 100 ML vial in Kenya.*

We have had a lot of new children enrolled:

- 1200 children per year in average (2018: 1878 children active in the program).
- 19300 children active in the program in all 14 countries in total – until they turn 18 or 21 year (depends on when they enter the program).

The program in Kenya:

- How many clinics are supported by the CDiC programme?

*9 clinics, but we use the hubs and spoke principal to serve more clinics. The 9 clinics are serving as distributing to the smaller areas.*

*There are 18-20 clinics in total with the “spokes”.*

- Which actors are involved in support these clinics, and are they all committed to all clinics?

*DMI, KEMSA, MOH, Novo*

- Do you work together with KEMSA (Kenya Medical Supplies Authority) to supply insulin products for the clinics?

*KEMSA is the main supplier for the CDiC - Novo is importing together with KEMSA – and paying tax for the products.*

*Insulin & strips (compass)*

- How do you see the current insulin supply status in Kenya?

*KEMSA is working fine – as long as you pay. In case of stock-outs it should be possible to follow up urgently with KEMSA. We take from the neutral stock - in case of really emergency. The neutral stock is holding with the local wholesaler where we buying the product from them.*

*Restrictions in logistics – reporting procedure is not always working.*

- Have you got any reports from clinics about stock-out, or in general lack of insulin availability?

*Abigail might know more about that.*

*The clinics have to forecast at the end of the year.*

- How are the reports sent back? Do they have Internet access?

*Abigail will know about that, but we see the clinics they don't have any idea to forecast – sometimes they order too little. Sometimes they type wrong numbers.*

- Is someone in charge of typing the statistics?

*KPI for enrolled children, held by Ulrik.*

In numbers:

- How many children have been treated in Kenya?

*1878 children active in the program now.*

- How many children do you expect to treat 2019?

*2000 children.*

- What is the target for number of treatments/diagnostics?

*Cant screen for type 1 but only type 2 – type 1 is Extreme critical, the children need the care ASAP. Children die, if not diagnosed in time and sometimes misdiagnosed. Type 2 you can have for a long time, without knowing. CDiC only serve type 1.*

- Do you have any data on insulin demand?

*Guessing really – still many not diagnosed. The country has no patient data and Novo is not interested in gathering all the data, since the priority is to donate insulin. But there is a goldmine of data, if someone would be gathering.*

Future state:

- What kind of information would you like to share, between Red Cross and Novo Nordisk?

*Service level KPI – we want to make sure the insulin is actually distributed when it's needed. Also traceability of the products and lead-time KPI. Would be nice to follow the process and see how RCK is performing.*

- *What target of service level would you prefer, for the clinics? 99%, 95%, 85%, or? 100% - the children need the insulin, it can be life threatening.*

*It will be key to have a strategic inventory close located.*

*KEMSA will be back up if RCK lack capacity – because they have a large network in the region.*

*MEDS (religious organisation) work on behalf of MOH to help with lack of capacity can also be a back-up distributor.*

- *Any other suggestions or considerations for a future setting with Red Cross Kenya? Make sure the insulin get distributed, at least the 9 clinics – then the hub and spoke should work for the rest.*

*RCK proposed to distribute insulin almost for free.*

*It also matters of RCK knowing what is at stake and performing accordingly.*

## **Appendix: Telephone meeting with Tariq Arain (Kuehne + Nagel)**

Questions for Tariq Arain - Kuehne + Nagel, Nairobi, Kenya.

Regional Development Manager East Africa.

Telephone meeting week 12 – Friday 22<sup>nd</sup> of March

- *What do you know about RCK operations and network?*  
*KN has done little work with RCK in the past, but we still know a little about them. They are quite good at first response – quite well operations in general.*  
*We have mostly been working with RCK on DDP terms – mostly it has been difficult to get the paper work in time. The Importer needs to do the tax exemption always - KN cannot help other than forwarding AWB, invoice, packing list, certificates, etc.*  
*Previous experience we had with RCK was lack of warehouse space – I have an example from Toms Shoes (USA) that have a strategy: when customers buy a pair of shoes, they give one pair for free to the poor. KN was delivering a large shipping container with shoes to the known location, but then they said we don't have enough space, so we had to split up into several warehouses instead.*

- *How is the culture in Kenya from your perspective?*  
*There has been a general culture in the past, to use the tax exemption as a loop whole to import goods for free. A lot of new NGO's has been popping up – corruption and laundering money. Because of extremely misuse of the tax exemption process, the government has tightened the rules a lot. Unfortunately this also affects the process of the real NGO's that do honest work for the people. The country has been affect by corruption for a long time.*  
*The various Ministries have their own budgets to get money. In theory the Ministry is “paying” the duty when you have a tax exemption. Therefore the general mind-set is not interested in giving exemptions, because it means no money in the state pocket.*  
*From my experience; try to avoid doing business with the government. Better to say no, instead of ending in a difficult situation with the government. They are not always playing by the rules or try to change the deal in the last minute. KN was doing some logistical work for KEMSA that ended up being a nightmare for us. They kept pushing us to bend the deal.*  
*Kenya has a lot of advantages compared to East Africa. IT is very much advanced. Due to a lot of unemployment, the country is educating many innovative young people.*

- *What are the challenges about import customs also Tax Exceptions?*  
*A Tax Exemption is divided in 2 steps: Master approval and single approval for every shipment. The Master is specific to the products or project that you're importing or doing. When you apply for an exemption you refers to the Master agreement, but every shipment still needs to be inspected.*

*One of the big challenges is: Bureaucratic becomes stronger, as described before due to the past misuse of exemptions.*

*In General NGO's do not have the right staff, they don't have paper pushers dedicated to make the paper work quickly and follow up with the ministries.*

*There is No priority for the specific shipments. They need people dedicated to chase the Ministry for approval.*

- What capabilities have K+N Nairobi?

We have approx. 2500 m2 of warehouse. We did an investment that didn't work as expected on pharma – Pfizer backed out of the deal in the very last minute. We have really good new facilities. Yes we can assist with RCK, but it has to be 2-3 years at least long term agreement. KN is trying to move towards food industry. We would have to know more about volume, etc. For the moment our pharma system is limited to UN work only. We also have a partner with KN that is really good with cold storage and stock management.

For other cold chain jobs, we can offer reefer containers with shelves inside – moveable storage facility that can be placed wherever it is desired.

- What can we offer to RCK?
  - Inventory – *as mentioned before we have a KN partner with experience in cold storage and stock management.*
  - Packing orders – *we have experience from UNICEF, with packing smaller quantities for Sudan and Somalia.*
  - Distribution – *we have a good network, but in my opinion on medicine – KEMSA has the better infrastructure.*

*We can offer some of the same methods that we use for UNICEF already. But we have to make a clear long-term agreement, also to know more about volumes.*

*For example: We Import medicine to UNICEF – holds the goods in storage on behalf of KEMSA, because KEMSA has lack of capacity.*

- How is domestic transport for medicine? How responsive?

*KEMSA is the ones with the best infrastructure.*

*There are limited numbers of cool trucks in the business.*

- Is it possible to hold products in bonded KN warehouse? Owned by Novo (By release it when the order come in from RCK).

*Medicine not allowed going on a bonded warehouse. Because medicine is already exempted duty – there is only Tax to be calculated.*

- What are your suggestions to have the supply chain super agile?

*Novo has to instead of ask questions, walk through the whole process with RCK to see all the procedures and technicalities involved, even the simplest things can become a constraint if it fails. Cold storage for instance – do they have backup generators for when power shortage hits and do they have enough fuel to the generator.*

*In Kenya they will always say, "Yes yes" – but they don't know what they say yes to. Kenyan culture they want to be first responder, but when shit hits the fan it is easy to point the fingers.*

*Be aware of limited cool trucks in the business, and consider cold packs, dry ice, etc.*

*Try to find out more in detail, what the RCK infrastructure is in the network. Who are the logistics partners of RCK and what is their capabilities.*

*Regarding agile supply chain – they to get the goods as close to end user as possible. Then holding them at hubs until the demand comes.*

*Integrity in the supply chain is important – due to traceability – all vials have a batch number; you will know who handled it. It is easy to point fingers.*

Follow up meeting:

Telephone Meeting in week 14 – Wednesday 3<sup>rd</sup> of April

- What is the UNICEF landscape in East Africa?

*I can tell you for Kenya: UNICEF makes goods available at import airport, ready for KEMSA to do import clearance. UNICEF supports with customs clearance even though KEMSA has to do it, because KEMSA is lacking capacity to handle all the goods in due time. Then UNICEF together with Nairobi K+N has mandate to keep and move goods to our own warehouse facility. UNICEF doesn't have capacity in Somalia to keep vaccines in stock and it is too high risk to keep the goods in Somalia – therefore stored in Nairobi. K+N pack and keep ready shipments on behalf of UNICEF – the shipments are stored in Nairobi until last minute needed time in Somalia.*

*UNICEF has own-chartered flights using broker WFP<sup>1</sup>. For commercial flights to Somalia they use K+N to arrange the transport – but only to airport then the UNICEF brokers take over locally.*

*Most places in Somalia they use solar powered freezers with small capacity. K+N prepare shipments in ice packs – usually in the evening, and flight in the morning.*

- Are K+N managing inventory for UNICEF in Nairobi, and how?

*Yes and we hold large quantities before UNICEF campaigns. UNICEF has reorder lead-time 3-4 days when its emergency from most suppliers – comes in with airfreight to Nairobi.*

*Polio Vaccine campaigns are held with the Ministry of Health in Somalia, to influence people to come in – it is difficult to push people to come in for the vaccines.*

*Measles Vaccine is an on-going campaign we support.*

- What kind of transport modes?

*Airfreight and very little by truck. It is important to know that all truck drivers are Somalia born, because Kenyan driver would simply not be allowed across the border. Different clans in the different areas run Somalia – so if the driver is not from that area/clan, he will come in trouble when driving through.*

- How is the product kept cold at all times?

*Cold storage in Nairobi, Iceboxes, small freezers*

- Is KN or UNICEF in charge of transportation?

*In East Africa UNICEF use own fleet vehicles or sub contractors locally or freight forwarders*

- What are the steps from Nairobi into Somalia?

*We distribute in small packages as possible in order not to lay hands on the vials. There are normally 50 vials per package. We pick and pack boxes, book airfreight and consolidate drops for many locations – the flight can do a round trip with more deliveries. We label the cargo for the different locations and load the plane accordingly – so that it is easy to unload fast. We get updates from the operator that we inform to UNICEF.*

- What are the steps for Ethiopia?

*The country doesn't see UN NGO as a humanitarian agency – they see them as commercial companies, and that makes it difficult to operate.*

- Do you or UN have several storage facilities?

*Many locations to spread out risk – UN lost a lot of warehouse in Somalia due to Al Shabab raids.*

- How is the network?

*UNICEF handles distribution in Somalia.*

- How do they share information in the chain?

*When during a round trip with the flight, UNICEF needs to have a time schedule when deliveries arrive. Real time information is shared on the phone; to keep UNICEF updated all the time. Then at the end we create an email to sum up the chain of events – for documentation purposes.*

- What is the most important in your situation to keep high responsiveness?

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<sup>1</sup> <https://www1.wfp.org/unhas> - WFP Air Service (UNHAS)  
<https://www.wfp.org/node/3165>

*Innovation is key – find creative solutions in war countries.*

### Appendix: E-mail from Jane Rasmussen (Novo Nordisk)

**Fra: JERS (Jane Rasmussen)** jers@novonordisk.com **Emne:** Scope change for your project

**Dato:** 27. marts 2019 kl. 07.16 **Til:** Lindebjerg, Claus / Kuehne + Nagel / CPH AA  
(claus.lindebjerg@kuehne-nagel.com) claus.lindebjerg@kuehne-nagel.com,

Claus Brandt Lindebjerg (c.brandt.lindebjerg@gmail.com) c.brandt.lindebjerg@gmail.com **Cc:**  
MEUH (Montserrat Ugalde Huebe) meuh@novonordisk.com, JTJQ (Jette Rune Jørgensen)  
jtjq@novonordisk.com

Hi Claus

I was called by Abigail yesterday and informed that they have just been contacted by Kemsas who informed them that the government had decided that basic insulin should be provided free of charge for all people in Kenya. Hence there is no need for us to create a new setup for the CDiC program via Red Cross. This is of course a big change to your project and hence we need to discuss the best way to still support you on this. Please call me when you have seen my message for alignment as we might have the option to just focus on another country. THX

BR Jane

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**Jane Rasmussen**

Director Shipping & Customer Service

Supply Chain Planning

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## Appendix: E-mail from Montse (Novo Nordisk)



Fra: Emne: Dato: Til: Cc:

**MEUH (Montserrat Ugalde Huebe)** meuh@novonordisk.com RE: Human insulin - Kenya 5. april 2019 kl. 16.25 Lindebjerg, Claus / Kuehne + Nagel / CPH AA claus.lindebjerg@kuehne-nagel.com Claus Brandt Lindebjerg c.brandt.lindebjerg@gmail.com

Hi Claus, Sorry for delaying my responses regarding the below. Find my input. If questions, do not hesitate to contact me. Br, Montse

**From:** Lindebjerg, Claus / Kuehne + Nagel / CPH AA [mailto:claus.lindebjerg@kuehne-nagel.com] **Sent:** Wednesday, March 13, 2019 10:57 AM **To:** MEUH (Montserrat Ugalde Huebe) **Cc:** Claus Brandt Lindebjerg

**Subject:** Human insulin - Kenya Hey Montse Are you busy? ☺ I just have a few questions, whenever you have time - of course.

Regarding the MOU: - What products is incl in the contract? Only Mixtard?

### **Actrapid, Mixtard and Insulatard**

- What is minimum order qty?

### **2000 vials**

Transportation:

How is the vials packed in boxes/pallets? How many can be put inside a pallet?

What is the size of the pallets?

### **Find attached a description of the packaging description for the above three questions**

- What is the lifetime of the ice, keeping the pallet cool?

**We don't ship with ice. We ship by air freight using thermal blankets. This are the results of the qualification of the blanket (thermal capacity)**

*If a pallet unit with diabetes products are placed at an extreme high temperature of 55 °C it would take*

*minimum 7 min before the products with the fastest temperature responses exceed 8 °C and minimum 128 minutes before exceeding 40 °C.*

*If a pallet unit with diabetes products are placed at an extreme low temperature of -15 °C it would take minimum 17 min before the products with the fastest temperature responses surpass 2 °C and minimum 73 min before descending -5 °C.*

Regarding Mixtard:

What is the shelf life? (% of total expiry date?)(Or days?)

**Total shelf life is 30 months. Acceptable according to the LTA is 75% of that**

How many days until Expiry date, is it still acceptable to give out to patients?

**This I don't know**

How many days of injections per vial?

**WHO calculates 40 IU/day, each vial has 100IU/mL and has 100mL = 1000IU/vial = 25 days per vial – this might vary but it's a good estimation**

- What is the difference in the various Human insulin (just short words)(maybe you can rank the products with stars?)

Human insulin	Insulatard®	Human insulin
	Actrapid®	Human insulin
	Mixtard® 30	Biphasic human insulin
	Mixtard® 40	Biphasic human insulin
	Mixtard® 50	Biphasic human insulin

Please refer to our webpage. Here you can have some description:

<https://brandportal.novonordisk.com/product-portal/human-insulin/products-and-devices.html>

- There is not existing any generic products in the market yet?

**I believe there are. You can ask MBUO, she might know more**

Pricing (I know you can't tell the number):

Are the prices more competitive, compared to Humalog?

**Not sure how much is Humalog**

What other cheaper brands, do you think is a threat to this partnership?

**I wouldn't know =S, I think Jenny could answer this.**

Or do you think the price is way better than competitors?

**I do not know because I am not exposed to the competitors prices.  
Someone in the field like Jenny will definitely know more**

Do you know the Retail prices of Human insulin – in Kenya? If you have any idea where to find retail prices?

**I think you need to ask Jenny this**

Kenya

I have seen in our system, on previous shipments going to Phillips Pharma. Are this a wholesaler, that also supply CDiC clinics, if you know?

**According to what Ulrik told us, the CDiC clinics are supported by KEMSA and not Phillips but maybe Jenny or Ulrik knows more.**

### Appendix: E-mail questions with Ruben Artal (ICRC)

Questions for Ruben Naval Artal – ICRC, Geneva  
E-mail week 11

- How is the relationship between the African national societies and ICRC/IFRC?

From the ICRC perspective, there is a collaborative – in both senses – relationship, as well as programs on capacity reinforcement for the African National Societies

- You said Kenya is considered as a stable country, can you explain what characterizes a stable country?

I might refer to the fact that they have a stable government, as well as broad access to health, education, etc.

- What are the requirements when you decide what insulin to buy, and why is Novo Nordisk the best partner for that?

Reliable on Lead Times, Capable to provide the batches in the sizes we need, as long as possible expiry dates.

- How would you characterize the ideal supply chain for insulin in East-Africa? What capabilities is key to be agile for Red Cross?

Secured Cold Chain, Fully traceable with order quantities adapted to the needs / consumptions in the country.  
Besides, and considering our very low score at forecasting, availability is key!

- Do you have a special method for calculating safety stock on insulin?

In general, we try to use APICS formula as much as possible for most of our items. If it is not possible, and it is a running article, we consider 3 months of safety stock at the end of the chain

## Appendix: Telephone meeting with Mohammed Wehib (ICRC)

Questions for Wehib Mohammed, ICRC Nairobi (Medical Logistics Specialist)  
Logistics Support Centre (LSC)- Nairobi  
Skype meeting week 14 – Monday 1<sup>st</sup> of April

- How is the ICRC structure/network?

*In Ethiopia we have no insulin intervention at the moment. Future big shipments will go directly – and Nairobi department is the controlling office.*

*We use cold boxes – always-fastest route with air – we use temperature monitor devices – we have good human recourses in order to have no backlog work.*

*We keep neutral stock – we receive orders and pack for the destination according to requirements. If the destination has no historical data, the stock is not meant for them, so the neutral stock is calculated on data we get from destinations. So if the destination has no historical data, we can't take products from the neutral stock.*

- How is the collaboration with the national societies, East Africa?

*In Somalia the collaboration is very high – we are working with 2 major hospitals – supplying for Somalia Red Cross Society. We supply medical and clinical supplies. Red Cross National Society runs the Hospital. We are accessing the area by our self.*

- What countries is ICRC operating in East Africa?

*For Somalia we have a small insulin distribution, about 22 vials in average per month. We keep a small stock of insulin at the clinics in case of emergency if a patients comes in that also have diabetes.*

*Other than that we mainly operate Yemen, Ukraine and Syria, from what I know.*

*From our Nairobi facility to Somalia – 1/3 of all products are going to the hospitals. We have fast access to Somalia via air and fast clearance procedures.*

- What about Ethiopia?

*It is difficult to work in Ethiopia for ICRC – a lot of regulations. The main issue: every item has to be registered and shelf life has to be minimum 75%. It will take some time to expand in that area.*

*Ethiopian Red Cross National Society used to have pharmacies and trucks, but I am not sure*

*if they still have. ICRC normally works alone.*

*Ethiopian ICRC order medicals supplies every month, but is still on the low side. For Ethiopia we keep stock in Nairobi and use commercial flights to forward cargo.*

*We had a lot of problems with the government in the past, but operations are getting better now.*

- What are some of the challenges you have with the governments?

*They are really bad and slow to answer our requests and messages. They normally confirm to help, but it always takes a lot of time for them to do anything. In some government departments are not always good organized.*

- Explain how your facility in Nairobi works?

*We have around 3000 m2 space for medical supplies – the warehouse is structured the same as in Geneva.*

- Explain how you distribute medicine out to East Africa?

*We have 2 airplanes chartered that go 2 times per week from NBO in to Somalia to Mogadishu. We sometimes use trucks to Congo and South Sudan, but the infrastructure is really poor.*

*We have future plans to send medicals by sea – it is still too early in the process.*

- Do you always distribute goods from Geneva first, or sometimes directly to Nairobi?

*Safety stock in every country operating*

*Geneva, Nairobi, Amman – main hubs*

- Do you import stock from different places?

*The country own stock should always be enough. The stock is only calculated for specific customers mainly.*

- Do you work with Freight Forwarders inside East Africa?

*Yes we use freight forwarders locally for Commercial trucks, but we also have our own fleet of trucks. It depends on the volume we have to move – if it is really large we use other forwarders. I visited KN in Nairobi to see their facilities – it is really good and lots of space.*

- Explain how do you calculate demand?

*The hospitals are supposed to calculate demand 12 month ahead, but it is very unpredictable.*

- For instance insulin? *No programs at the moment with insulin.*
- What is your forecast time-horizon? *We try to forecast 18 months forward, but again demand is very unpredictable – that means we have to review stock every month, and also order new products every month to keep stock levels.*

- How do you calculate safety stock?

*We look at the forecast and keep 3-month inventory as safety stock.*

*The hospitals order every month, but it's best to do 6 months in advance. When they place new orders, we deliver with 2 weeks lead-time.*

- How do manage stocks?

*We look at the historical data and forecasts. We have a service level of 98% - that is quite good performance.*

- Do you repack to smaller quantities in Nairobi?  
*We pack medicines in cold boxes – the warehouse pick and pack the orders.*

- How is information shared from East Africa?

*ICRC has field officers in all the places – registering orders and stock levels. The network is very unreliable – the system is not good in the field*

- Who is responsible for what in the chain?

*The field officer has access to the system – log requests into the system (item / quantity / delivery date) – we have an approval system of 2 people before the order can be processed – supply chain administrators in Nairobi checking availability of products and double check the data in the system – then to warehouse for packing – then transport department get the details from warehouse to ship out and dispatch also has contact with the field officer to give information on the shipment.*

*The warehouse holds weekly meetings to discuss issues, performance and etc.*

*Every step in the process has a status code in the system, so everyone with access can follow the order in the process.*

- Can you sum up; some of the important factors need in order to be agile?
  - 1. *Have products on stock always (due to poor infrastructure – poor information systems.)*
  - 2. *Try to control demand all the time*
  - 3. *Share the information in the system with everyone*
- Good human resources*

## Appendix: Skype meeting with Jenny Chong (Novo Nordisk)

### Questions for Jenny Chong, Logistics Manager - Novo Nordisk, Kenya

Week 15 – Skype meeting on Tuesday 9<sup>th</sup> of April

Semi-structured interview

#### General questions:

- Explain your work in East Africa?  
*I am in charge of all the logistics in Sub-Saharan Africa - in charge of orders and shipments with all customers.*
- How is the situation now in Kenya?  
*I hear about the situation in Kenya has changed recently. But I don't know what happens in detail. We were supposed to attend this Skype meeting to discuss future collaboration with Red Cross, but it was cancelled due to Kenyan government giving free basic insulin. But as I said, I don't know full in detail. Philips pharmaceuticals are the main distributor in Kenya.*  
*For the time being we have about 24 weeks lead-time – due to constraints from Novo factories. So we try to push customers to purchase as early as possible not to get stock outs. We will meet the delivery dates of course and sometimes if customers has a stock crisis we can negotiate with program managers to release products earlier – but we are not always lucky. We do our outmost to support our customers.*
- Can you describe what role KEMSA has in supplying medicine?  
*KEMSA is the procurement department for the Kenyan Ministry of Health.*  
*Normally what we do with KEMSA are tenders 1-year period, so we renegotiate every year.*
- Are you working with freight forwarder?  
*Distributors have their own forwarders, we are only transporting to airport at destination with Kuehne and Nagel.*
- How do you communicate with the clinics?  
*Novo don't have communication directly with hospitals and clinics. The distributors themselves handle this.*
- How do they determine when to place orders and calculate forecast?  
*Sales analysts look on past sales to make forecasts. We follow stock levels from distributors and give recommendations compare with monthly consumption. If we can see stocks is running low, we push customers to make orders asap, in order not to run out of stock.*  
*Generally we forecast up to 3 years ahead.*  
*Orders are not on regular basis and can be fluctuating. Demand can change according to tenders, if Novo wins large quantities. My colleagues is now handling tenders, since I am not doing that anymore – it is too time consuming and too much work for a single person.*
- How is the Red Cross operation?

*No communication with Red Cross from my side.*

*UNICEF little bit communication and we distribute a little insulin for them. UNICEF always makes a lot of tenders and we don't get all of them.*

*Here we mainly operate with distributors and some tenders for government Ministry of Health.*

- How is the "Best Private Wholesaler's" network?

*Generally central based cold storage facility for instance in Nairobi. They use their own trucks or sub-contractors; I don't have any specific detail.*

- How to be agile in your opinion?

*It is important to get stock quick to the country – place orders early – inform Novo early about demand.*

*All the basic insulin is registered in Kenya – only new products are difficult to import.*

*In Ethiopia we have 2 distributors – we try to visit them regularly and have build a good relationship – good communication. You have to have relationship to cooperate – when you meet for the first time, the relationship comes to a new level. We visit most customers maybe once a year.*

*Important discussions we take on the phone and follow up with email in writing.*

*We have tender contracts with the Ministry. It is really important to make sure all terms and conditions are correct. Documents must be really good.*

*Trends in Ethiopia – we might have a new big tender for the next 3 years. We deliver only to Airport in Addis. We are struggling with competition from Ethiopian based insulin manufacture. Novo Nordisk is an ethical company – some competitors do what ever it takes that Novo cannot do.*

*CDiC program in Ethiopia – Novo donate insulin. We supply 2 times of the year.*

*The main issue we have in Ethiopia now: with Forex foreign exchange for the last 5 years. High demand of insulin, but customers cannot buy because they don't have currency from Forex. Approval at Forex can take up to 1 year.*

## **Appendix: Telephone meeting with Hanne Strandgaard (WDF)**

Questions for Hanne Strandgaard World Diabetes Foundation (WDF)

Telephone meeting week 15 – 9<sup>th</sup> of April

*I have been fully occupied making a field rapport from recent travel in Kenya.*

*From my point of view the Supply chain is struggling – the government has some issues to distribute medicine. KEMSA has a lot of competition from private distributors. Government health care facilities also use MEDS instead of KEMSA – some places they think MEDS is a better system to procure medicine.*

*WDF don't support with medicine. We support with also supply chain communication to help. In the Defeat NCD project we support the supply chain weaknesses – and support implementing new supply chains, including the relevant partners and enhancing collaboration with many partners.*

*WDF main purpose is to educate pharmacists and nurses.*

- How many clinics do you have in Kenya and Ethiopia?

*In Ethiopia we have a large national program, with the Ministry of Health – capacity building personal and donating equipment. It is required that Ministry of Health can deliver the insulin, when the demand grows with the program.*

*Issues are with lacking information from clinics and hospitals, back in chain. We see they run out of insulin.*

*It is also a problem that governors in the counties are not informed about demand. If the governors in the counties don't get the information from the hospitals and doctors, they won't know how to spend on diabetes care. WDF tries to inform about the situation on NCD.*

- *The insulin are mainly donated by Novo – who is handing out the insulin to the patients? Kenya Novo has pushed the price in many years to low levels. WDF supported the CDiC program with education on pharmacists, nurses, children and parents.*

- *What is the relationship between WDF and Red Cross?*  
*We don't work with Kenyan Red Cross. We do work with the Danish Red Cross in European countries – the relationship is really good. WDF donates funds to Red Cross but also to the national Red Cross in the countries.*

- *Are you working with other NGO's and which?*  
*WHO and WDF are working together in some places, I don't know the details.*  
*WDF made a MOU contract with UNICEF. WDF cannot travel to Somalia due to war and terror risk. WDF wants to be on the ground, and if not possible WDF don't want to be involved.*

- *Who is managing insulin stock at the clinics?*  
*Doctors prescribe insulin to the patient and inform the administration office in the hospital how much insulin is needed. The administration office tries to control stock.*

- *How often do you get messages about stock-out?*  
*Happens a lot – we have seen it several times. If the clinics don't have insulin, the patients have to go out to a private pharmacy to buy it instead.*  
*However the CDiC program never has stock outs. Children always get the required insulin. Novo Nordisk is doing a good job of donating insulin to the children.*

- *How is the work in Kenya, and what challenges do you have?*  
*Issue number 1: decentralizing health care to the counties, they are not equipped to handle it on their own. It is always a problem to decentralize health care.*  
*The government try to roll out a "Universal health coverage package" – so all people in Kenya can have access to health care, but it needs a lot of communication to work. I feel it can be difficult with lacking information sharing and too little funds.*

- *How is the collaboration with the national governments?*  
*Close collaboration with the Ministry of Health works fine. Especially in Kenya the Ministry of Health prioritize NCD, but the movement are still lacking funds.*  
*Some countries in the East Africa don't prioritize NCD really. It can be difficult to influence the governments in some countries.*

- *What would you like to tell the government about the situation?*  
*It is important to prioritize NCD and make a higher budget on the area.*  
*Make sure not to have stock out of insulin. We need a well-defined monitoring system to register data, so it is easier to control stock and forecast demand. Make sure to educate people to input data correctly and send the information back in chain. Currently using a paper-based system requires a lot of manual work and time consuming.*  
*Not all doctors are so much educated in diabetes.*

## **Appendix: Telephone meeting with Samuel Hailu (ICRC)**

Questions for Samuel Hailu, ICRC Ethiopia, Logistics Country Manager  
Telephone meeting week 16 – 17th of April

*ICRC in Ethiopia we are mainly working in civilian prisons giving aid and securing a fair treatment. We are working together with the doctors.*  
*Normally we import from our logistics centre in Nairobi. Other stock is coming from Geneva. We are not allowed to buy locally – but only basic category like bandages and other basic material. One*

*prison close at Addis we have regular supply every month.*

*There is trouble in the country with conflicts between various ethnic groups.*

- What is your strategy in Ethiopia?

*In Ethiopia we don't have so much operations. We mainly just have prisons, and stock ready to deliver when an emergency strikes.*

- What is your strategy on insulin?

*We don't have any programs including insulin; we only keep stock of insulin for our own personal. EPSC Government agency is the one main distributor of insulin purchasing in bulk shipments.*

- How is the structure & network in Ethiopia?

*Red Cross National Society have their own pharmacies in the country and running their own network. We (ICRC) are not involved in the National Society network.*

- How are your facilities?

*We only have one facility in Addis for ICRC.*

- What are the size and human resource?

*For medical we have about 100 m2 and freezers for the medicine. We have 2 storekeepers in the medical area and in the future employing another medical logistician. Other than the medical we also have the main warehouse for all the other goods. It looks similar to the Geneva setup. Vaccines we import from our branch in Geneva.*

- How do you distribute medicine, cool trucks, and airplanes?

*Import from outside is only send by airfreight. We have our own trucks – we use no third party for medical. We want to keep control of transport – that nothing is damaged and loaded with other items.*

- How is the collaboration with the ministry/government?

*Very challenging with medical. It is difficult to import. We always need a support letter from benefices; we need to show the ministry, that the goods are special for aid purposes. In our case the support letter comes from federal prisons.*

- What are some of the major challenges working in Ethiopia?

*The country has a major foreign currency shortage for the last approx. 25 years. It means that companies cant get hold of currency in order to purchase goods from overseas. Red Cross Ethiopia has a lot of stock outs – they cannot import new goods due to missing foreign currency. It is really problematic to get hold of foreign currency from the banks. Government supply agency of medicine is not performing well. I think we have relatively good infrastructure.*

- What are some of the important factors to keep an agile supply chain?

*Good system supply chain has to be set up. Users are inconsistence they really need to be trained and all more consistent. The system has to be consistent everyone in the chain.*