

# Reviewing Sustainable Urban Logistics from a capability approach perspective: A comparison on the impact for micro enterprises between the cities of Groningen and Zwolle



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## Colophon

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## Preface (in Dutch)

Studeren, volgens velen de mooiste tijd van je leven. Hoewel er nog veel in het verschiet ligt, kan de studententijd mij niet meer worden afgepakt. Met een dubbel gevoel schrijf ik dan ook de laatste hand aan deze master scriptie. De master scriptie moet het huzarenstukje van de studenten tijd opleveren. Alle kennis en alle ervaringen opgedaan in de afgelopen vijf jaar komen samen in dit document. Vanuit mijn studentenkamer, de UB, bij vrienden en 'thuishuis' kreeg het document steeds meer vorm en is het nu, na een jaar afgerond.

Het was, met de dagelijkse impact van het coronavirus, een vreemd jaar. Op sommige momenten bracht dit tegenslagen met zich mee. Zo besloot ik uiteindelijk door het gebrek aan ritme, gezamenlijke druk en gevoel van urgentie om de periode van het scriptie-schrijven iets te verlengen. Dit bracht echter ook voordelen met zich mee. Door de enorm snelle ontwikkelingen in de stadslogistiek werden nieuwe beleidsplannen en regelgevingen regelmatig gepubliceerd. Dit heeft ertoe geleid dat de inhoud en toegevoegde waarde van het document alleen maar is toegenomen. Terugkijkend op het gehele jaar ben ik dan ook trots op zowel de route als het eindproduct wat u nu voor u hebt liggen.

Het is nu dan ook tijd om het bijbaantje bij de Albert Heijn gedag te zeggen en aan de slag te gaan bij een werknemer aansluitend bij mijn studie. Binnen mijn vriendengroep ben ik de laatst overgebleven student. Aangezien mijn *roots* in Friesland liggen hoorde ik dan ook met enige regelmaat "daar heb je die eeuwige student uit Groningen ook weer". Die tijd is nu voorbij. Binnenkort kan ik ze met mijn masterdiploma de mondsnoeren.

Voordat u de pagina omslaat naar de volgende pagina met een overzicht van de gebruikte figuren, tabellen en afkortingen wil ik nog kort een aantal mensen bedanken. Allereerst mijn begeleider Ward Rauws. Nadat we gezamenlijk het traject van de bachelor scriptie al hadden doorlopen, werd ook de master scriptie een gezamenlijke reis. Met scherpe feedback, interessante suggesties en duidelijke richtlijnen heeft Ward wederom een belangrijke bijdrage gehad aan het eindresultaat. Daarnaast wil ik de respondenten van zowel de questionnaires als de interviews bedanken voor de medewerking. Zonder deze hulp geen data, zonder data geen onderzoek, zonder onderzoek geen scriptie en zonder scriptie geen diploma. Kort wil ik de respondenten Gert Jan, Klaas Yde en Pier nog even in het bijzonder noemen, aangezien zij naast het interview nog extra moeite hebben gestoken in het helpen bij mijn onderzoek. Tot slot wil ik natuurlijk nog mijn familie bedanken voor de steun gedurende het afgelopen jaar, dankjewol!

Ondergetekende,

Arnout Hylke de Haan

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Abbreviations	
<b>SUMP</b>	Sustainable Urban Mobility Plans
<b>SULP</b>	Sustainable Urban Logistics Plans
<b>ZEZ</b>	Zero-emission zone
<b>GD-ZES</b>	Green Deal Zero-emission City Logistics
<b>UCC</b>	Urban Consolidation Center
<b>SME</b>	Small-medium-sized enterprise
<b>CO2</b>	Carbon dioxide
<b>SPES</b>	Samenwerkingsproject Expertpool Stadslogistiek
<b>SCM</b>	Supply Chain Management
<b>GCC</b>	Groninger City Club

## Abstract

Logistics movements in cities are rapidly increasing, in 2020 even further accelerated by the lockdown measures as part of mitigating COVID-19 crisis. The growth of city logistics has its effect on the livability of cities and therefore city administrations impose sustainable urban logistics plans to reduce CO<sub>2</sub> emissions, congestion and noise pollution. It is, however, questionable if these sustainable policy plans acknowledge the needs and capacities of the less wealthy (micro) enterprises in adjusting their business operations. A comparative case study approach in the Dutch cities of Groningen and Zwolle, focused on the initiatives of zero-emission zones (1), delivery windows (2) and (micro)hubs (3) was conducted to research this issue. The capability approach of Sen in combination with the 4 A's approach on sustainability by Macharis & Kin formed the theoretical basis. Through expert- and stakeholder interviews in combination with a questionnaire among micro enterprises the implications for micro enterprises are identified. Although the policy initiatives are ambitious, the field of opportunity for (micro) enterprises to successfully progress in the transition is there. Time as variable plays a critical role. On the one hand does the time give opportunities for (micro) enterprises to adjust and conform to the situation when the policies plans are implemented. On the other hand is time subject to uncertainty that in these current times guarantee for inconvenient challenges for the (micro) enterprises. As the study indicates that logistics is for micro entrepreneurs a minor aspect of their business operation, cooperation on the street level is crucial in fostering their contributions to sustainable urban logistics.

**Key concepts:** capability approach, 4 A's of sustainability, micro enterprises, transition, actor involvement, livability, Groningen and Zwolle

## Abstract in Dutch

Logistieke bewegingen in steden nemen snel toe, in 2020 nog verder versneld door de lockdown-maatregelen als onderdeel van het indammen van de COVID-19-crisis. De groei van stadslogistiek heeft zijn effect op de leefbaarheid van steden en daarom implementeren stadsbesturen duurzame plannen in de stadslogistiek om de CO<sub>2</sub>-uitstoot, congestie en geluidsoverlast te verminderen. Het is echter de vraag of deze duurzame beleidsplannen rekening houden met de behoeften en capaciteiten van de minder vermogende (micro)ondernemingen bij het aanpassen van hun bedrijfsvoering. Om dit probleem te onderzoeken is een vergelijkende casestudy onderzoek uitgevoerd in de Nederlandse steden Groningen en Zwolle, gericht op de initiatieven van zero-emissiezones (1), bezorgvensters (2) en (micro)hubs (3). De capaciteitenbenadering van Sen in combinatie met de 4 A's benadering van duurzaamheid van Macharis & Kin vormden de theoretische basis. Door middel van expert- en stakeholderinterviews in combinatie met een enquête onder micro-ondernemingen worden de implicaties voor micro-ondernemingen in kaart gebracht. Hoewel de beleidsinitiatieven ambitieus zijn, liggen er een kansen voor (micro)ondernemingen om de transitie succesvol te ondergaan. Tijd als variabele speelt een cruciale rol. Enerzijds biedt de tijd kansen voor (micro)ondernemingen om zich aan te passen aan de situatie voordat de beleidsplannen worden uitgevoerd. Anderzijds is tijd onderhevig aan onzekerheid die in deze huidige tijd garant staat voor lastige uitdagingen voor de (micro)ondernemingen. Aangezien uit het onderzoek blijkt dat logistiek voor micro-ondernemers een ondergeschikt aspect van hun bedrijfsvoering is, is samenwerking op straatniveau cruciaal om hun bijdrage aan duurzame stadslogistiek te stimuleren.

**Kernbegrippen:** capaciteitenbenadering, 4 A's van duurzaamheid, micro-ondernemingen, transitie, actor betrokkenheid, leefbaarheid, Groningen en Zwolle

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# 1 Introduction

This first chapter of the thesis explains why this research was conducted. It gives information about theories and concepts used, and explains subsequently the problem that is addressed. This is followed by both the scientific and societal relevance, after which an outline of the following chapters is shown as layout for this thesis.

## 1.1 The rapid growth of the logistics sector

In the last decade(s) and especially in the most recent months caused by COVID-19, logistic movements in cities have been increasing. The supplies of supermarkets and warehouses, garbage collection, food deliveries and other online ordering services are booming as a result of technical developments and changing needs and desires by costumers (Sakai et al., 2015). Hence, the on-demand economy is growing faster than ever before. The main issues and bottlenecks arise in these places where space is limited and population density is high, in our cities (Björger et al., 2019). Cities do have a high variety of functions that are all depended on logistic movements. Within this last-mile, as how urban logistics are often referred to, logistics cause congestion, inefficiency and high emission-rates (Björger et al., 2019). These negative consequences are all discussed within the concept of sustainability. Assessing and thereby improving the level of sustainability within urban logistics is crucial to tackle the challenges cities are facing (Behrends et al., 2008).

In the ability to respond to the changing environment in cities and the increased pressure on climate related issues, policy makers are giving more and more priority to concepts as sustainability and livability. On the international scale, this has led to the Paris Agreement presented in 2015. One of the main goals of this agreement is a 40% emission reduction rate in 2030 compared to 1990. Translated to the national (Dutch) scale, the signed Climate Agreement include a 49% emission reduction rate by 2030 (Rijksoverheid, 2021). To meet these goals set by the national (and European) government, progressive and ambitious policy plans have to be (and are) designed regarding transportation ends. We have already seen Environmental Zones (Milieuzones) and the Clean Air Agreement (Schone Lucht Akkoord) in the mobility sector. Specified to the logistics sector, over 50 parties have signed the Green Deal Zero Emission with the ambition to deliver emission-free in city centers from 2025 onwards (Zero Emissie Stadslogistiek, 2021). Figure 1 displays a pie chart in which the total GHG emissions are displayed, categorized per segment.

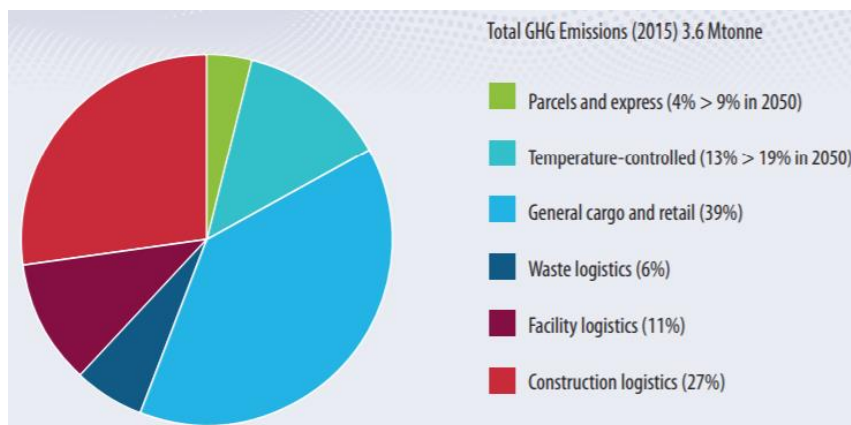


Figure 1:  
Percentages of  
greenhouse-gas  
emissions in the  
sector of logistics

With the introduction of Sustainable Urban Mobility Plans (SUMP) and Sustainable Urban Logistics Plans (SULP), the translation from policy to practice has been made (Eltis, 2020). SUMP is a conceptual plan drafted by multiple stakeholders and experts in the field who have defined the main principles of a modern and sustainable urban transport plan. SUMP is defined as '*a strategic plan designed to satisfy the mobility needs of people and businesses in cities and their surroundings for a better quality of life*' (Aifandopoulou & Xenou, 2019 p. 9). Part of the overall SUMP are the Sustainable Urban Logistics Plans (SULP) that are designed to contribute to context specific measures by e.g. defining priorities and a focus on effectiveness (Aifandopoulou & Xenou, 2019). Zero-emission zones (ZEZ), delivery windows, modal shifts and other progressive goals are included in many policy plans. However, current debates are increasingly questioning these plans on its inclusion and feasibility for all involved. One of the major features to be discussed in this research.

## 1.2 Theoretical linkages

### 1.2.1 The 4 A's approach on sustainability

This research focuses on stakeholders within the theme of sustainable urban logistics. It is needful to have an unambiguous understanding of the sustainability concept. The traditional categorization of economic, social and environmental is the most used way to define sustainability. Nevertheless, in the complex subject of urban logistics are these three components often contradictory in the solution building process, especially when putting into practice (Macharis & Kin, 2016). Restrictive measures imposed by local authorities to, for example, decrease pollution rates cause inefficiency in delivery schedules and greater financial costs. As a result, despite the reduced emission levels, the overall level of sustainability does not improve per se. This is a conclusion of studies by Ballantyne et al. (2013) and Macharis & Kin (2016). In dealing with this, Macharis & Kin (2016) propose a new way to approach sustainability that is specifically linked to urban logistics. This approach focuses on awareness, avoidance, act and shift, and anticipation. A categorization that distinguishes itself on the capabilities of sustainability rather than on its three traditional components.

The approach can be conducted as a four-step strategy and is more focused on the process instead of direct measures to address the issues at hand (Gonzalez-Feliu, 2018). With this change in focus there is no emphasis on the three separate (traditional) categories of sustainability but a greater focus on the overall objectives of sustainable urban freight. Besides, from a private stakeholder perspective it is related to the consideration that they must consider both the macroenvironment and the micro business environment. A link that draws attention to the existing power relations and strategic positions (competition) in the branch (Macharis & Kin, 2016). Additionally, as the approach is more closely linked to urban logistics is it expected that there will be less issues when putting it into practice (Gonzalez-Feliu, 2018).

### 1.2.2 The capability approach

In the attempt to get a better understanding of the suitability of the new policy plans related to the diversity of actors, a specific theoretical lens is needed. In this study, the capability approach by Amartya Sen is placed central in the line of reasoning to examine the suitability of the policies with the actor's available capacities.

The capability approach by Amartya Sen is among others used for the evaluation of social arrangements or institutions and policymaking processes. It is a more and more used alternative for traditional welfare economy approaches (Robeyns, 2017). The approach has a central focus on the individual *capabilities* that enable to do or be what is desired or wanted. In this, a distinction is made between so-called functionings and capabilities. In other words, a distinction between achieved well-being and the freedom to achieve well-being (Robeyns, 2017). In the context of urban logistics, these well-beings can be translated into the ability to act in their preferred way within the boundaries set by policies. The approach is more and more applied in social sciences, and has even been applied to transportation ends. These studies, however, focused primarily on personal transportation abilities and social justice (Hananel & Berechman, 2016).

### 1.3 Problem description and case selection

Sustainable Urban Mobility Plans and Sustainable Urban Logistics Plans have been a great step forwards in the attempt to tackle the challenges within urban logistics. However, despite the great ambitions, some alarming observations are made by various researchers (Macharis & Kin, 2016; Ballantyne et al., 2013 and Macharis et al., 2012). They have concerns about the number of failing measures when arrived in the implementation phase. According to Macharis & Kin (2016) is this a result of the lack of (private) stakeholder involvement in the process. Ballantyne et al. (2013) adds to this a lack of mutual understanding and knowledge among public and private actors. Although both SUMP and SULP do have clear steps on stakeholder involvement, the focus is still too much market-based. From the capability approach perspective, in comparison with the market-oriented approaches, the micro enterprises do suffer most from new imposed initiatives (Bushe, 2019). The medium- and large sized companies will in that respect be better able to adapt as they have greater resources to utilize. This brings us to the question if these ambitious, new and sustainable policy plans acknowledge the needs and capacities of the smaller and less wealthy (micro) stakeholders in Dutch city centers.

The wide variety of actors is the main factor of complexity in the whole context of city logistics. There is no standardized context or a set of measures that works independent from its context. Consequently, to get in the ability to review the policy plans in practice (on a theoretical basis), a specific context is desired. This research will therefore focus on the Dutch cities of Groningen and Zwolle. The geographical context of the cities is comparable what makes the analysis of the findings more valuable. Besides, both cities are provincial capitals and are progressive in their approach to deal with the challenges of urban logistics. Key in this is the fact that both signed the Green Deal Zero Emission Stadslogistiek accompanied with the implementation agenda (Zero Emissie Stadslogistiek, 2021).

## 1.4 Research objectives

This study critically reviews the current policy plans from the perspective of micro urban logistics actors in Dutch city centers. From an analytical point of view, this study aims to get an overview of the proposed new policies regarding sustainable logistics and specifically there intended effects in the sector. Following these results, the second aim is to draw lessons from a capability perspective about the impact on the individual (private) micro actors' capabilities. With the combination of both aims, the intended results of this research can be of added value for local policymakers in there ambitious stance to improve the quality of the overall sustainable urban logistics sector and its actors.

### Primary research question

To what extent do sustainability initiatives by local governments enhance the capabilities of micro urban logistics actors in the inner cities of Groningen and Zwolle?

### Secondary research questions

1. How can the concept of sustainability within urban freight transport be conceptualized from a capability perspective?
2. What are the main trends on sustainability initiatives in Groningen and Zwolle?
3. How do the defined trends affect the capabilities of micro enterprises in the inner cities of Groningen and Zwolle?
4. Which differences and similarities in effects on the capabilities can be determined between the municipalities of Groningen and Zwolle and what lessons can local governments learn to improve their Sustainable Urban Logistics Plans?

## 1.5 Scientific relevance

Great theoretical debates focus on measures that would increase the level of sustainability. However, defining solutions is rather challenging and shows the high level of complexity. Context dependency, actor involvement and uncertainty on technological developments are just some factors of influence (Lindholm, 2010). Because city logistics has previously been somewhat neglected, relatively little research is available on stakeholder involvement in city logistics (Ballantyne et al., 2013).

In the current urban planning system, in which bottom-up approaches together with full consensus are desired, questions arise on how to deal with the variety of stakeholders (Roukouni et al., 2018; Macharis et al., 2012). Here, the notion of 'relevant' stakeholders is becoming more and more central. Namely, the ambitious plans might not be feasible for a significant number of stakeholders. Most literature has analyzed the stakeholder involvement from a welfare economy point of view (Macharis et al., 2012). This, however, does not or slightly include individual components. Hence, there is a knowledge gap in evaluation methods for analyzing individual stakeholders' capabilities to meet new and ambitious initiatives. Applying the capability approach of Sen as an alternative to the classic welfare economy approaches broadens the perspective on how sustainability measures in urban logistics can be successfully (and widely supported) implemented.

## 1.6 Social relevance

Urban freight transport has one of the most negative effects on the sustainability of cities, but they are currently not prioritized in urban planning (Behrends et al., 2008). Recently, the concept of urban logistics is gaining increased attention within (city) planning. The majority of local authorities stimulate the development of logistic industries as they have a high potential of economic growth (Sakai et al., 2015). However, concerns about the negative impacts of urban logistics are increasing. Urbanization rates keep raising what causes increased pressure on especially the last-mile deliveries in cities. Figure 2 displays an overview of the population growth per municipality in the Netherlands. Economically, the estimated costs for transportation are 10-15% of the total costs of a product, but 75 percent of these logistic costs are made within the last mile (Macharis & Kin, 2016). Inefficiency is a major cause for the higher rate. To indicate, over 20% of vehicles in urban areas are empty. Besides, whilst their share in the total traffic flow is only up to 15%, the total share of emission can be up to 30% (Macharis & Kin, 2016). This shows the urgent need for change regarding sustainability of urban logistics and its related livability. Changes, however, cannot be imposed at all costs. Ambitious developments and new technologies are proposed. Since these are new, being able to make use of these new developments can be problematic for smaller stakeholders. To prevent all these stakeholders from exclusion in the urban logistics environment, research is needed on the consequences of these developments. The increased knowledge and understanding that will be collected on is directly connected to the societal relevance of this research.

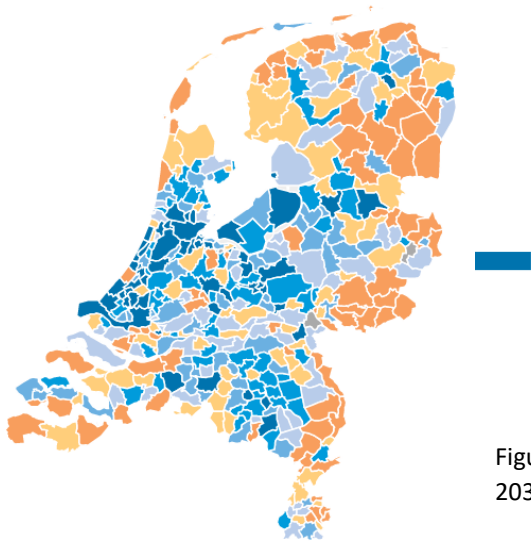


Figure 2: Percentage of population growth per municipality 2015-2030 (source: CBS, 2016)



## 1.7 Outline/Guide for the reader

After this first chapter of introduction, this document is followed by seven more chapters. Whereas the relevance and some first insides on urban logistics was presented above, the next chapter discusses the theoretical base on urban logistics. The definitions, theoretical linkages and found knowledge gap in literature are followed by the methodology in chapter 3. The elaboration of the used methods are linked to chapter 4 where the results of the study are presented. The analyses of the results is also part of chapter 4. The subsequent chapter 5 includes the drawn conclusion and the discussion accompanied by recommendations for further research. Chapter 6 completes this research with a reflection on the whole research process.

## 2 Theoretical framework

The following chapter gives an overview of all the concepts and theories relevant for this research. First, a quick history lesson on urban logistics is given, followed by the introduction of sustainable urban logistics. After some additional theoretical insides on logistics, chapter 2.2 discusses the ins and outs of the 4 A's approach on sustainability. The approach is complemented with some theory on actor involvement after which chapter 2.3 discusses the capability approach. The chapter is concluded with the conceptual model.

### 2.1 The Urban Logistics sector

#### 2.1.1 Urban logistics – A state of art

The first documents and regulations regarding city logistics date from the first century (AD) and are assigned to Julius Caesar (Gonzalez-Feliu, 2018). During the period of the Roman Empire, and in the subsequent Middle Ages there was moderate interest in logistics movements. In the centuries following the Middle Ages, city logistics were mainly organized by private stakeholders (e.g. guilds) (Gonzalez-Feliu, 2018). From the Industrial Era in the 19<sup>th</sup> century onwards, transport and logistics have gone through massive transformations. In particular the massive expansion of the international road infrastructure network as a response to the rapid developments within the car industry had some great impact (Williamson, 2002). The investments in the industry were still predominantly focused on transportation of people. However, freight transportation matters increased in popularity, as the economic benefits and activities started to be vital for urban areas (Gonzalez-Feliu, 2018). In 1970, in which the baby boom caused an indirect grow in the flow of goods and services, the first negative aspects started to occur. The rise in congestion was the main issue in this period. More central coordination was needed to deal with the issue, resulting in the interference of public authorities in the 1980s (Gonzalez-Feliu, 2018). As the issues started to become of more national scale, more coordinative and general measures were asked to combat the increasing problems. From the 1990s onwards, such coordinative actions were developed and public awareness on the issues clearly increased (Gonzalez-Feliu, 2018). Several countries, especially in Europe, initiated with policies regarding freight transport. The policies together with increased level of research on the topic, brings city logistics towards the 21<sup>st</sup> century, in which the field of study has been evolving enormously.

#### 2.1.2 Urban logistics in the 21<sup>st</sup> century

Whereas research, regulations and policies in the 20<sup>th</sup> century were rather limited, city logistics started to gain increased interest around the turn of the century. City logistics are seen as the final stage within the cycle of supply chain management (Neghabadi et al., 2017). With the increasing urbanization numbers (approximately 70% of the world's population will live in cities in 2050), proper planning of urban logistics matters. Therefore, in 1999 a first international conference on city logistics was held in which a definition of the subject was formulated. City logistics was defined here as:

*“the process for totally optimizing the logistics and transport activities by private companies in urban areas while considering the traffic environment, the traffic congestion and energy consumption within the framework of a market economy”* Taniguchi et al. (2001) in Gonzalez-Feliu (2017) p. 3.

City logistics contain multiple subjects that all in all should have positive effects on mobility, sustainability and livability within the city (Taniguchi et al., 2014). These three aspects are all part of the recently introduced concept of 'the Smart City' (Eremia et al., 2017). The linked concept of smart mobility and the linked sustainability has been widely discussed in literature. He & Haasis (2020) give an overview of this

literature that has been subject to debate. Theoretically, sustainability should be proportionally be about environmental, economic and social challenges, practice shows a disproportionally focus on environmental issues (He & Haasis, 2020). One of the arguments for this is the short-term focus (5-10 years) of most planning innovations. With this short-term focus specific projects or problems are addressed all separated from each other. This is a way to deal with the increased complexity. Nevertheless, in this way policymakers somewhat underestimate or misunderstand the overall impacts of such projects on the total urban freight system. This overall system is subject to both endogenous (urban logistics innovations) and exogenous (urban development) trends (He & Haasis, 2020). With taking this as a basic principle, the usage of sustainability as an inclusive term in future developments is key to acknowledge. Having this said, we will have a little more detailed look on the sustainable urban logistics systems.

### 2.1.3 Sustainable urban logistics systems

According to Gonzalez-Feliu (2017) an 'urban logistics system' consists of a number of elements that together function as the basis of development. First, and most obviously, it consists of *infrastructures*. Infrastructures can either be linear such as roads, rail- and waterways or nodal which consist of specific spaces like parking lots. Second, *organizational components* that are either related to transportation aspects or the warehousing aspects based on demand and supply management. The third component is based on *regulations* as they can be part of two types of policies. Restrictive policies that focus on limitations such as timespans, road pricing and prohibited areas. The second one is more advising, as incentive policies focus on modifications in routing by giving information and other network configuration tools. Fourth, there is the *technological component* which might in the current technological era be the most important and promising aspect towards successful developments in the urban logistic system. It consists of multiple aspects like vehicle optimization, intelligent transport systems and other ICT related developments. As fifth there are *communication and valorization campaigns* to raise awareness and increase knowledge regarding urban logistics. The final component is the *financing mechanism* that is closely related to public private partnership as well as minor issues as subsidies and other financial supportive options.

An interplay of all these components create opportunities for improved circumstances. Although, it might be challenging to define 'improved circumstances', there is a common agreement among stakeholders involved that the concept of sustainability plays a crucial role (Gonzalez-Feliu, 2017). The perceptions on what, who and how regarding increased sustainability differ what makes solution building rather challenging. The term sustainability was introduced in the famous Brundtland report of 1987 in which environmental issues were clearly linked and added to the international political agenda. The definition in the Brundtland report was as followed: '*Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs*' (World Commission on Environment and Development, 1987, p.16). Despite that the report was released 33 years ago, it is interesting and at the same time remarkable to notice that the focal points of the report are still comparable to today's challenges. The first point is the essence on *needs* that refers to the basic elements necessary for a 'sufficient' level of liveability. Secondly, the importance of limits of use to sustain in essence to the infinite.

The most common and traditional components of sustainability are economy, society and environment (Gonzalez-Feliu, 2017). The economic component is based on performances and viability of the logistic system. There is a direct link with supply chain management (SCM) that contains the whole process of logistic movements, i.e. the efficiency and effectivity. The economic sphere is often given priority as it is crucial for the assurance of continuity over time (Gonzalez-Feliu, 2018). The environmental component is the most criticized one as it contains most of the negative aspects of city logistic movements. Reduction

of air and noise pollution, rational use of resources, congestion and other environmental factors are central issues. As the component has the most impact on the liveability of places, most attention is paid to this component in terms of measures that reduce negative effects (Gonzalez-Feliu, 2017). The third component, the social sphere, is the most complex and paradoxically the least studied sphere. The social sphere includes impacts on society in general, but also societal aspects in the working environment of e.g. companies (Gonzalez-Feliu, 2018). Again, liveability is central in this sphere.

As mentioned do the three spheres together function as a sustainable system. Gonzalez-Feliu (2017) has defined this functioning more precise, as he added three areas of interaction between the three spheres, shown in figure 3. Firstly, feasibility refers to the fulfilment of a set of economic and environmental criteria. Equitability, secondly, focuses on the equal distribution of resources whereas bearability is primarily linked to the quality of life as this is the central aspect in the relationship between the social and the environmental (Gonzalez-Feliu, 2018).

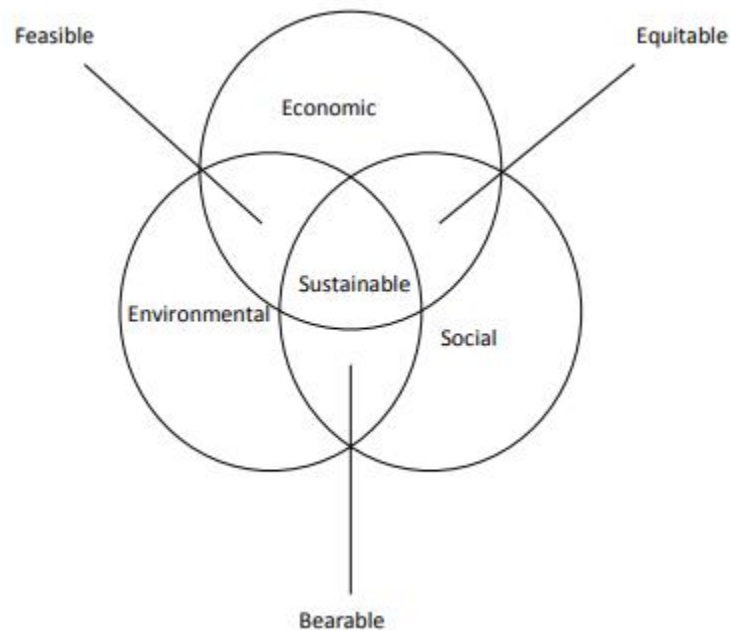


Figure 3: Components and its interaction on sustainability (Gonzalez-Feliu, 2017)

#### 2.1.4 Last-mile delivery and initiatives

The three components and its interactions are of significant importance for the understanding of the level of complexity when talking about sustainability. The place in which these aspects all come together most prominent is, linked to the supply chain, in the last-mile delivery phase. The last-mile is a highly localised area in which many actors act and various interest are pursued. The interests are conflicting in many cases. Subsequently, finding synergies is challenging, especially since the communication and cooperation between the actors involved is rather limited and uncoordinated (de Souza et al., 2014). Ballantyne et al. (2013) emphasize on the need for local authorities to be conscious of the complexity of the ongoing activities and especially on its potential impacts.

The Sustainable Urban Mobility Plans (SUMP) introduced in the introduction have been a starting point towards improvements. The aim is to create logistics plans that both cope with the demands of market

actors but also to a liveable and zero-emission urban environment based on the public actors' demands (Aifandopoulou & Xenou, 2019). This is challenging as these demands are often divergent from each other. A local scale level with a specific focus on the last mile contributes on the one hand to a demarcated scope. This scope would limit the actors involved and thus the complexity. On the other hand, as the last mile is still part of the whole logistics network such a scope would limit the inclusiveness and thereby the overall support of the (proposed) measures. The debates in literature about the best initiatives to improve the sector are extensive. Quak (2008) distinguishes four categories of initiatives with yet an another additional subdivisions of initiatives. The four main categories are policy-; company driven-; physical infrastructure- and transport reorganising initiatives.

Category	Initiative type	Number of initiatives
<i>Policy initiatives</i>	Road pricing	7
	Licensing and regulation	21
	Parking and unloading	8
<i>Company driven initiatives</i>	Carrier cooperation	12
	Vehicle routing improvement	14
	Technological vehicle innovation	5
<i>Physical infrastructure initiatives</i>	Consolidation centre	15
	Underground logistics system	5
	Road infrastructure development	4
	Standardisation of load-units	4
<i>Transport reorganising initiatives</i>	Transport auction	3
	Intermodal transport	8

Table 1: Initiatives reviewed by Quak (2008)

Quak (2008) reviewed a number of 106 initiatives that could possibly contribute to the level of sustainability in cities. Table 1 gives an overview of all the initiatives. In this research we only focus on the policy initiatives. Although the categorization, most initiatives are to an increasing extent interdependent to each other. This connection is especially visible when putting into practice. As an example, imposing or extending time-windows will highly likely cause an increased interests in the development of consolidation centres in cities. The measures reinforce each other which leads to a positive feedback cycles in the light of sustainability. For these feedback cycles, its crucial to act just. This in the light that there is not a group of actors constantly disadvantaged against another group solely advantaged in the cycle.

### 2.1.5 Transport Justice

Transport Justice is about the lack of attention paid to specific groups acting in the transport system. Studies show that the gap between those enjoying the fruits of the developments against those who have clear deterioration of the 'improvements' is increasing (Martens, 2017). In the current 'Decade of Action', there is a clear contrast between the emphasis on the environmental sphere compared to especially the social sphere. Whereas the environmental sphere has made the shift from 'predict and provide' to 'predict and prevent', the social justice dimension, as it is called by Martens (2006), still focuses on demand instead of needs. This conclusion was made after critically reviewing two key tools in transport planning: transport modeling and cost-benefit analysis (Martens, 2006). Some basic and deeply rooted principles in transport imply dissimilarities between population groups at the expense of the 'weaker' group, while favoring the 'mobility-rich'. A major reason is the direct connection between the number of trips executed and the total benefits by an investment in transport.

Amartya Sen argues that justice should serve rights to the practical context as the theoretical ideal solution will most likely not be found (Sen, 2009). With the capability approach being a possible replacement for the traditional cost-benefit analysis (Alkire, 2002), Sen argues clearly against the linked concept of utilitarianism (Fainstein, 2011). According to Sen, cost-benefit analysis are typically overestimating the benefits while underrating the costs. Besides, distributional outcomes are often ignored resulting in disproportionate policymaking (Fainstein, 2011). A rather interesting contribution on this in literature has been made by Susan Fainstein through her research on the Just City. The general focus of her Just City is on equity in which planners and policymakers should consider aspects as diversity, participation and quality of life more in planning. Although some clear obstacles and challenges are ahead, with starting points from the local level, improvements and ultimately a whole reformation is possible (Fainstein, 2011). In her book Fainstein uses a lot of theories and concepts to explain her ideas about the Just City (Fainstein, 2011). In the final part of chapter one, she introduces the capability approach. She uses the approach in her attempt to justify current programs whether these were according the democratic norms, whether the capabilities of all actors were included and whether actors are recognized by each other as part of the system.

In imitation to Sen's ideas on the cost-benefit analysis, Fainstein proposes a more sensitive analysis in which urban planners should opt for an analysis based on actor's capabilities. The smaller actors, who are relatively disadvantaged from others, should be treated in such a way that their circumstances improve relatively the most (Fainstein, 2011). This seems to be idealistic, and in some way it is. 'Disadvantages' are in the first place subjective and there is, in the second place, still a great focus on the system in decision-making. Besides, as also acknowledged by Fainstein (2011), are actors who are subject to most disadvantages also the actors with the least political power. In the attempt towards change Fainstein opts for some more commitment to justice. Justice instead of just efficiency in the evaluation would contribute to a fairer balance between the multiple actors.

## 2.2 The 4 A's approach on sustainability

The above teaches that the inclusion of justice in policy plans, apart from the content, is crucial for a successful and wide-supported implementation. The lacking attention from policy makers to the economic sustainability of actors in the field of urban logistics therefore needs to be re-examined (Macharis & Kin, 2016). Macharis & Kin (2016) have proposed an approach that is related to this point of view. By shifting the focus more to the outcomes instead of the 'pre-disagreements', the situation might improve. So, instead of dividing sustainability into economic, social and environmental sustainability, the emphasis is on more overarching themes/concepts. These concepts are not specific measures themselves but can better be describe as categories under which measures can be divided. These categories do better serve the joint challenges and hence add to the level of justice of urban logistics policies. In the introduction, the four concepts have shortly been introduced, but the next session will go into more detail on the four A's; Awareness, Avoidance, Act and shift, and Anticipation.

### 2.2.1 Awareness

Awareness is a first step to conscious all those involved in the necessity of change and improvements, no matter their individual motives or goals. According to Macharis & Kin (2016) policymakers are most important to make aware as they ultimately decide and possess most power in the decision-making process.

In raising the awareness, there are some specific tools needed that try to improve the situation proactively. Raising awareness might also happen reactive, but in this situation some negative effects on the livability have most likely happened already. Increased level of illnesses as a result of the high emission exposures is for example not a way to raise awareness. A first proposed approach is to compare and publish the differences, and thus the potential improvements that can be achieved with new tools or technologies in the reduction of emission levels (Macharis & Kin, 2016). Linked to the economic effects, calculating external costs and compare these with sustainable methods could act as an eye-opener for multiple actors. Another action to increase awareness is by rewarding companies and firms with quality marks. Companies can advertise with such quality marks what will increase awareness among consumers. Environmentally, this goes along with the increasing significance of 'corporate social responsibility' (CSR), in which social and environmental concerns get a more prominent place in business (Vanclay, 2004). At the same time, these marks or certificates might induce a sort of competition between companies to be 'the most/more sustainable company' as inclusion of sustainable factors will become of more and more value for the consumer. This will indirectly affect economic benefits and thus represents a strategic opportunity in business (Evangelista, 2014). The certificates show that the economic and environmental targets are closer related to each other than expected in most cases.

A final issue that should not be underestimated is the opportunities in individual e-commerce to raise awareness among consumers (Macharis & Kin, 2016). A major benefit here is that it is about overall sustainability, not specified to one of the traditional features. When ordering online, consumers get additional options to pick more sustainable options in delivery. Sometimes there is even the option of paying less when picking a more sustainable option. The options are optional, what makes it a perfect way to make consumers aware of the sustainability issues that come along with an order. Step-by-step this should improve the situation regarding sustainable logistics in its most broad sense.



### 2.2.2 Avoidance

The second step to sustainability is that of avoidance. Avoidance is about avoiding logistic movements to minimize the nuisance (Macharis & Kin, 2016). Prevention is better than cure. The nuisance is mainly based on negative effects on both the environment and society (livability), as from an economic point of view avoidance is not a necessary step to take.

Applying efficiency into practice and thereby avoiding movements within the last mile is the greatest challenge. Offering online services is one of the measures that could be implemented to reduce the number of movements. This would suit for example in the service of e-books or online teaching (Macharis & Kin, 2016). Nevertheless, most goods and services are needed at another location, whereas transportation is unavoidable. Making the unavoidable more efficient and thus get rid of the unnecessary, is also a way of avoidance. The realization of urban consolidation centers (UCC) is in this light the most discussed solution (Macharis & Kin, 2016). UCCs are logistics centers that are easily accessible for both transportations coming from suppliers and from these centers to the end-consumer within city centers. Picking the right location for UCCs is thus crucial for an efficient flow of goods and services. Currently, there is this trend that UCCs are getting smaller in size and closer to the final delivery areas. This is accompanied by the use of environmentally friendly transportation modes. Several studies show that private actors are willing to pay part of the expenses, but they don't have the resources to fully finance these measures (Taniguchi, 2014; Kin et al., 2016). This often results in UCCs that are temporary and therefore not fully integrated in the urban logistics system (Verlinde et al., 2012).

Besides UCCs, various other measures linked to consolidation are available to put into practice. In this, public authorities can either impose restrictive policy measures or stimulating policy measures. In their article Verlinde et al. (2012) refer to the COST 321 project to specify four categories with measures. These are additional transfer points (AT); common delivery points (CD); changing behavior of carriers (BC) and changing behavior of retailers/shippers (BRS). The measures are assessed on the relative potential to reduce the negative effects of urban logistics. Besides, studies have been done on the effects of the measures. Remarkable here is the fact that none of the consolidating measures are assessed with great and consistent effects. This, however, does not mean that the measures don't have any value. Especially with the complexity of sustainable urban logistics little effects might even be of more added value considering the whole context. With the logistic movements increasing almost daily, abandon or prevent the flows with major changes is simply impossible. Little adjustments and improvements all together will therefore contribute to improved circumstances.

### 2.2.3 Act and Shift

This third category of act and shift is about the reactivity and capacity of the urban system to adjust to changes (Gonzalez-Feliu, 2017). Two main types of 'shifts' are defined. First, modal shifts. The main aim of modal shifts in cities is the reduction of trucks and other noise and air polluting vehicles (Civitas, 2020). Although it is rather simple to find shifts that are beneficial for both the environmental and social sphere, economic viable shifts are more challenging to initiate. This is mainly caused by the complexity of the whole urban system in which single modalities are acting. It requires cooperation and management of various stakeholders in different businesses. Thereby, as currently the economic circumstances are unattractive for investments, incentives have to be created by stakeholders for stakeholders to foster changes (Civitas, 2020). In this, the local conditions are critical as the opportunities are highly context



dependent (Macharis & Kin, 2016). With the use of waterways, for example, conditions like distances from city centers, water depth, flood risks and available docks are location specific. For electric vehicles, charging options are crucial, just as the available infrastructure for e.g. e-cargo bikes. Regarding these cargo bikes, several studies have done research on the advantages of this type of transport. Although context-dependent, this modal shift results in less congestion, fewer access restrictions, no greenhouse gas emissions, effective deliveries and lower purchase costs (Macharis & Kin, 2016). Negative aspects are the limited range of deliveries and loading capacity, just as lower speed and current deficient integration in the supply chain. The greatest potential in a shift towards electric cargo bikes could be the great economic viability. The negative aspects of this shift are mostly to be solved by increasing the capacity.

The second type of shift is a shift to off-peak hours (Macharis & Kin, 2016). The main aspect solved by this measure is congestion as the peak of vehicles within the city will be flattened. Economically, the shift would contribute to a more efficient supply chain. A pilot study in Stockholm on a shift to night-time deliveries showed that a shift would result in both driving and energy efficiency and a greater reliability of deliveries (Fu & Jenelius, 2018). From the environmental perspective, the decrease in congestion would result in less emissions. Nevertheless, as the shift does not primarily reduce the number of vehicles, the environmental effects are minor compared to the modal shift. Therefore, a combination of both modal shifts and off-peak hour logistics would bring the best of both together. According to Macharis and Kin (2016) two main threats come along with off-peak hour deliveries.

First, noise pollution becomes an issue as noise during night times is perceived negatively. Especially in densely build and high populated areas as cities. To control and avoid noise nuisance, laws and regulations on maximum decibels are imposed. During (un)loading of trucks, these decibels are critical to comply with. Subsequently, the Netherlands launched a new programme, the Piek-programme, with which the nuisance of trucks was tried to be reduced. Although the programme was a success, it did not solve the whole issue of nuisance during off-peak hours (Verlinde, 2015). Other countries were facing the same problems, in which the overall environmental effects were positive but the economic consequences detrimental. The introduction of electric vehicles or other less noise polluting vehicles would be beneficial. This shows the potential of the combination of both shifts.

The second challenging issue is the probable resistance of receivers in the supply chain. Receivers are the main group of actors in the chain that fear higher costs as the deliveries are out of their normal operating hours (Verlinde, 2015). Off-peak hour deliveries often require additional hiring of men and is less efficient for them. The current lack of cooperation among receivers and carriers to harmonize most appropriate delivery schemes is therefore an extra challenge in case 24-hour-deliveries are introduced.

#### 2.2.4 Anticipation

The final A is the A of Anticipation and entails new technologies as the base for development and improvement. Technological developments in the past have shown its cruciality in the contemporary world, and they will remain crucial in the future.

The first branch of development focuses on vehicles and modalities. CO<sub>2</sub> free transport, autonomous vehicles (AV) and other developments are for many key to future and especially sustainable transport. Nevertheless, as this is a transition over a long period of time, incremental changes are desired. The costs of new electrical vehicles are at this point very high. So, despite the low costs of operating, the purchase of electrical vehicles remains for many unprofitable. The often-made argument of the limited driving distance does not apply for most urban logistics areas as the distances within the city centers are also limited (Macharis & Kin, 2016). Thereby, alternative vehicles like hybrid electric plug-in or natural gas-powered vehicles do have a greater range and are thus more flexible. So, developments in the branch of vehicles has a great potential and is starting to integrate more and more in contemporary urban logistics.

Besides vehicle technology, multiple other technologies do have potential to contribute to an increased level of sustainability in urban logistics. In the technological era we live in, the infinite numbers of data available do have great potential to examine and analyze all these potential developments. Main trend currently is deliveries by air, specifically with drones (Macharis & Kin, 2016). Deliveries by air give at first sight many advantages, as they don't make use of road infrastructure, they emit less and deliveries can be done faster (Brunner et al., 2019). Although these advantages seem to guarantee success, numerous challenges are defined as well. Issues like (social) safety, security/privacy, load capacity and landing options need further research. The main challenge is legislative. The role of authorities in the development of air deliveries is thus crucial as they are the main body in the decision-making process.

#### 2.2.5 Actor involvement

Actor involvement is not one of the A's of the concept proposed by Macharis & Kin (2016). Actor involvement, however, could be added as a fifth A seen the cruciality of its inclusion in the planning process. In the problem definition this cruciality is shortly mentioned by linking it to the market-based orientation on which actor involvement is currently based. In the philosophy of bottom-up approaches and striving for full consensus is actor involvement the main thread. As such, this fifth A could also be seen as one, maybe the, crucial condition for establishing the other four A's instead of being an additional A.

In general, there are three main groups of actors to be distinguished (Quak, 2008). In the first place there are *governments*, either local, regional or national. The second group are indicated as *professionals* and consist of carriers, receivers and shippers. The final group of actors are named *impactees* and represent residents, visitors and other public. A notable thing is that there are different types of receivers here. Receivers like store owners on the one hand, and receivers in the sense of customers of that store on the other hand (Quak, 2008). So, actors are differently involved in the logistics sector. Hence, they are also affected by new policies differently. The difference are best understandable when linking the types to the urban logistics transport system and their position in the supply chain.

In this research the main focus is on the interplay between the group of actors of *governments* and *professionals*. The evolving system of urban logistics is subject to opportunities but at the same time to threats for (professional) actors involved. In the analysis of the current opportunities and threats for actor involvement, almost all studies made use of a theoretical lens based on the market-economy (Macharis et al., 2012). From this point of view the actors may be involved, but there are several examples in which the needs and desires of specific actors or not taken into account sufficiently. Local and less-wealthy actors in a city who do not enjoy a powerful position are most often the primal group of actors affected by this. If we link the power in decision making to the rungs of Arnstein's Ladder of Citizen Participation, the power will stagnate in a degree of tokenism (Arnstein, 2019). Although authorities might be willing to give private actors a say in the process, certain decision have to be made to meet the stricter standards that are demand by higher authorities. For example, the Climate Agreements signed by 196 countries, aim to emission free mobility by the year 2050 (Klimaatakkoord, 2021). Although plans can be composed with the mobility (and logistics) sector, not all actors will be in the position to participate equally in the decision-making process. The interests in the bigger picture do not outweigh the interests of these less wealthy actors.

Before moving on to new approaches that try to deal as much as possible with these issues, we should first get into a little more detail on the definition of less wealthy (or small) actors. In Europe there is a basic dichotomy of businesses based on the number of people employed (OECD, 2017). There are small, medium-sized enterprises (SMEs) and obviously large enterprises. SMEs do have an additional subdivision

into micro enterprises (<10 employees), small enterprises (10-49 employees) and medium enterprises (50-249 employees). Large enterprises do have more than 250 employees in their company. The less wealthy actors which are discussed and examined in this research are primarily micro enterprises complemented with some small enterprises. They give many employment opportunities, increase diversity, reduces poverty rates and contribute to a better personal lifestyle and overall livability (Bushe, 2019). Although it is generally accepted that these enterprises are crucial for economic development of a city, they are not always sufficiently taken into account (sham participation).

New theoretical approaches are emerging in which the desires of SMEs are more and more included. These theories opt for representativeness of all individual actors involved, in which justice is getting a more central role. An upcoming and more used theoretical lens is the capability approach (Sen, 2009). The next session will elaborate on this theoretical lens.

## 2.3 The capability approach

### 2.3.1 Basic principles

The capability approach is a theoretical approach that has been launched as an alternative for traditional welfare economy approaches (Stanford Encyclopedia of Philosophy, 2020). The approach dates from the 1970s when Amartya Sen for the first time criticized the traditional economic models to measure and evaluated peoples well-being and freedoms. According to Sen, there is a missing link in the perspective of how well-being should be seen. There should be a greater focus on what humans are able to *do* on the one hand, and on who we are able to *be* on the other hand (Stanford Encyclopedia of Philosophy, 2020). Translating this to urban logistics, there should be a greater focus on the situation of the single actors and their abilities to conform to imposed laws and regulations. Are these actors in the first place able to meet the new standards, and are they in the second place willing to. For both, the crucial notion is the context dependency as the different circumstances of actors are decisive in what they are able to achieve.

Sen has defined the capability approach as *“an intellectual discipline that gives a central role to the evaluation of a person’s achievements and freedoms in terms of his or her actual ability to do the different things a person has reason to value doing or being”* (Sen, 2009 p.16). For a better understanding of the achievements and freedoms Sen mentions in this definition, we will elaborate on the two core concepts of the approach. Functionings in the first place can be defined as ‘beings’ and ‘doings’ that a specific human can undertake. Examples of functionings are being well-nourished, being educated or linked to urban planning the functioning of travelling (Robeyns, 2017). Secondly, capabilities define the opportunities (or real freedoms) to achieve functionings. In other words, the possibilities of a human to do a certain thing, whether he or she does want to do it or not. Here, there is a difference between willingness to do and the ability to do (Robeyns, 2017). Taking the functioning of travelling as an example, someone might be able to take the bus to work. Traveling by bus is then a capability, even if he or she still went by foot. Referring back to the definition of Sen are functionings the achievements whereas capabilities represent the freedoms.

When placing the approach into perspective with the more traditional economic approaches, the capability approach shifts the focus from its means to its ends (Stanford Encyclopedia of Philosophy, 2020). By means are the resources and public goods meant where people have access to. The ends are focused on what people are able to do with these means, the outcome. The traditional point of view argues that people with the same means would automatically reach the same ends. Nevertheless, a similar set of means can definitely result in different ends. For actors in the logistics sector, for example, the mean of having access to an electric vehicle would be similar for all. The availability and proximity of charging locations, however, are definitely of influence on the final ‘end’ that will be achieved. The additional factors to which these possible differences can be linked are in the capability approach defined as conversion factors. Together with resources, they roughly form the actors’ capability set in the logistics sector.

### 2.3.2 Resources and conversion factors

With the shift from means towards ends, the importance of context and thus that of resources and conversion factors have become central in the debate. Traditionally, resources imply the availability of money, commodities and consumer goods. In the capability approach, resources are understood in a broader context (Robeyns, 2017). Educational degrees of persons and other competences can also be a form of resources. Thereby, in the definition of resources, the alternative position (value) of resources in

the line of thinking (from means to ends) in the approach is the most important aspect. Conversion factors are, in one sentence explained, ‘the degree in which a person can convert resources into functionings’ (Robeyns, 2017). For a better understanding of conversion factors, an example linked to logistics will be used. A baker has a company car to deliver his bread in the city. He does not want a car just because of a certain color or interior but because the car gives him the ability to carry bread from a to b in a limited amount of time. By this, a car adds to the functioning of service level (delivery time) as a car is compared to walking or biking the better option. However, the degree to which a person can convert the resource (the car) into valuable functioning depends on three main factors.

In the first place *personal conversion factors*. Part of this type are, for example, physical condition, intelligence or metabolism (Robeyns, 2017). In the example of the baker, this would become visible in case the baker only knows how to drive a diesel car. This will negatively affect the service level compared to the baker (competitor) that knows how to deal with the limited radius, charging etcetera. The second group of factors are *social conversion factors*. As the word already says it, these factors are related to the society in which people live. Typical features are public policies, norms and values, power relations and other hierarchies (Robeyns, 2017). Public policies might differentiate in the span of delivery windows in cities, resulting in unequal functioning of the same resource. The third and final category of factors are *environmental conversion factors*. These factors are related to the physical and built environment. Geographical locations, infrastructural developments, pollution rates, natural disaster hazards or the presence of water resources like seas are typical factors here. In case the charge capacity of a region is underdeveloped, the use of an electrical car is less valuable to places where are enough charging stations.

The conversion factors show that the circumstances in which a certain action is taken do matter. The difference and diversity of conversion factors is one of the most central concerns discussed in the capability approach (Robeyns, 2017). An additional and crucial distinction that must be made here is the differences between single abilities and the combinations of potential functionings (Robeyns, 2017). From a normative perspective, the approach compares the positions and options of different actors. By looking at the options, it is not key to look at single options but at the combination of multiple options that can be realized simultaneously. For sustainable urban logistics, this would mean the purchase of CO<sub>2</sub> neutral cars but at the same time an ongoing competition with other actors and no fired employees. The way how these (combined) capabilities, resources and conversion factors interplay and how they can be used in making steps towards increased sustainability will be discussed in the next paragraph.

### 2.3.3 Capability Approach and Sustainable Development

The capability approach has been used by multiple other researchers to analyze sustainable developments. According to Lessmann & Rauschmayer (2013), the easiest way to incorporate the capability approach in sustainable development is by substituting the term ‘needs’ in its definition by capabilities. The reviewed definition, as given in paragraph 2.1.3, would then be the following: ‘*sustainable development is development that promotes the capabilities of present people without compromising capabilities of future generations*’ (Lessmann & Rauschmayer 2013, p. 97). By putting this definition into practice, the key question to ask is whether a set of capabilities or the subsequent achieved functionings affect the set of capabilities of actors in the future. So, in case local authorities impose zero-emission zones and urban actors have to purchase zero-emission vehicles, the question is to what extent this action will affect the capabilities of future generations. Does this, for example, complicate the possibilities for a starter to step in the business world or elsewhere. Although this is challenging to find out, the basics are rooted in the effects of individual functionings on the whole ‘system’.

Lessmann & Rauschmayer (2013) visualized this correlation between individual functionings and systems, displayed in figure 4. In the figure, arrow 1 reflects the influence of the systemic level on the individual level by influencing either conversion factors or resources. Arrow 2 implies (direct and indirect) effects of individual actions on the system. Examples of these are the usage of non-renewables or the influences of political decision-making.

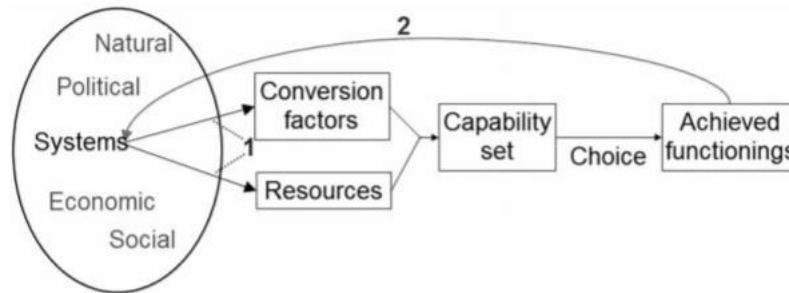


Figure 4: Individual capabilities related to systemic level

The model by Lessmann & Rauschmayer (2013) is an useful model to better understand the multiple linkages within the capability approach. However, several flaws can be determined when using the model as a tool to say something about effects in or on the future. One flaw that is of special importance when linking it to logistics is that of dynamics. Dynamics consist of two main features that bring challenges with it. In the first place, this is the factor of time. Time defined in sustainability theories is often related to at least one generation what counts for approximately 25-30 years. This long term point of view is different from the original application of the capability approach. Instead of using the theory as a prospective tool, it has most often been used as an evaluative approach (Lessmann & Rauschmayer, 2013). For this research, in which the effects of new imposed laws and regulations on actors in the urban logistics sector are examined, the evaluative side is more applicable.

The second feature regarding dynamics is that of uncertainty. Uncertainty goes hand in hand with the timeframe, but it is challenging on itself as well. By picking a specific context in which things can be examined, the room for uncertainties is already reduced. The zero-emission zone deal, for example, can be examined within a specific period of time (now until 2025) and specific areas (e.g. Groningen) (City logistics, 2020).

If we take another look at figure 4 this research will have a primal focus on arrow 1, as in this step the factor of time is nihil, what makes it more suitable for an evaluation. New initiatives are based on the intended effects on the systemic level. This, however is an aggregate of all the actions of single actors in the system. Lessmann & Rauschmayer (2013) mention the uncertainty and unclarities that come along with the interaction between the individual, collective actors and systemic level. From an individual level, appropriate capability sets have to be ensured. Here, knowledge is needed on how to discriminate the consequences of the systems on the specific actors involved. From the systems perspective, the effects of the achieved functionings are crucial but they are at the same time difficult to predict. So, the authorities have the task to take care of the system by implementing a list of actions but at the same time they have to preserve the viability of actors involved.

Apart from the challenges for policymakers to perform all the issues above, it also brings one of the greatest shortcomings of the capability approach to the surface. Defining and selecting a comprehensive set of actor capabilities is a knowable tough task. Which capabilities are relevant and why

is the most discussed topic in the literature on the capability approach (Kimhur, 2020). Up until now, we have only discussed the capability approach as introduced by Amartya Sen. Nevertheless, with Martha Nussbaum there is a second researcher who has written a lot about the capability approach. Their main difference in their views on the capability approach is on the set of capabilities available. Whereas Nussbaum opts a universal list of ten capabilities, Sen believes that there is no possibility for an universal list as all capabilities are context dependent (Kimhur, 2020). The list of capabilities proposed by Nussbaum are displayed in figure 5. For the full explanation of all capabilities separately, see appendix I.

<b>Life</b>	<b>Being Able to Live to the End of One's Lifespan without Premature Death</b>
Bodily health	Being in good physical health, including reproductive health
Bodily integrity	Being able to move freely, being free from violence, having bodily, reproductive, and sexual autonomy
Senses, imagination, thought	Being able to reason, think and create, access to scholarly traditions such as art, literature and science. Having pleasurable experiences and avoiding non-beneficial pain
Emotions	Being able to form and mourn emotional attachments to others
Practical reason	Being able to conceptualise what is good, and being able to plan one's future
Affiliation	Subdivided into interactions with others, and dignified non-discriminatory participation in society
Other species	Being able to live with concern for animals, plants and the natural world
Play	Laughter, play, recreational activities
Control over one's environment	Subdivided into political participation and material rights to own property and undertake employment

Figure 5: List of capabilities by Nussbaum (Toze et al., 2020)

A quick analysis of the list pops the question how all these capabilities can be linked to sustainable urban logistics. Indeed, not all capabilities can be linked what automatically brings us to the ideation of Sen. Although the idea of the context dependency and unique situation is a fair one, it also brings questions. This is also why there has been some great critique on the capability approach as proposed by Sen (Robeyns, 2005). Most critics miss a systematic methodological reasoning in the theory how a comprehensive list can be composed. Robeyns (2005) brings some discussions on this critique together that partially deals with these flaws in the methodology. She distinguishes three procedural categories that can be formed for composing a list of capabilities. Small-scale projects, large-scale empirical assessments and large-scale policy design (Robeyns, 2005). Capabilities regarding sustainable urban logistics will be in the category of large-scale empirical assessments as all affected actors cannot be included in the process of composing the capabilities directly. Mapping all affected actors of the zero-emission-deal of 2025, for example, is almost impossible. In the small-scale projects all affected actors can be mapped, whereas the policy design method is currently underdeveloped what makes them both unsuitable. The further argumentation of the usefulness of this method will be done in chapter three.

#### 2.3.4 Towards a conceptual model

In the previous paragraphs we have introduced the capability approach, its link with sustainable development and some practicalities to use it as an evaluation method. Between the written lines, the importance of actor involvement became evident constantly. This is a similar pattern with the increasing importance of actors in the 4 A's approach on sustainability. The presented link with justice gives a clear picture of the inconsistencies of on the one hand actor involvement and on the other hand disproportionate agency that takes place. Specified to sustainable urban logistics, these disproportionate ratios come to light when local authorities introduce initiatives, mainly in the form of new regulations. This research tries to get a better understanding of the effects of these initiatives on actor's capabilities in urban logistics.

Based on the theoretical framework drawn up in this chapter, figure 6 displays the conceptual model that illustrates the links that were established. On the left side are three sustainability interventions displayed. The research by Macharis & Kin (2016) has shown that interventions should lead to changes regarding the four A's in the 'behavioral change' box on the right. It is, however, questionable if this is true for all types of actors and enterprises. The ideas of Lessmann & Rauschmayer (2012) on the connection of the capability approach to sustainable development is used to set the micro enterprises' position in this framework. This is displayed in the box in the middle. This research will further examine the effects of the new initiatives on the actors' capabilities. What role do the resources and conversion factors play and to what degree does this affect the achieved functionings and thereby the intended behavioral change expressed in the four A's.

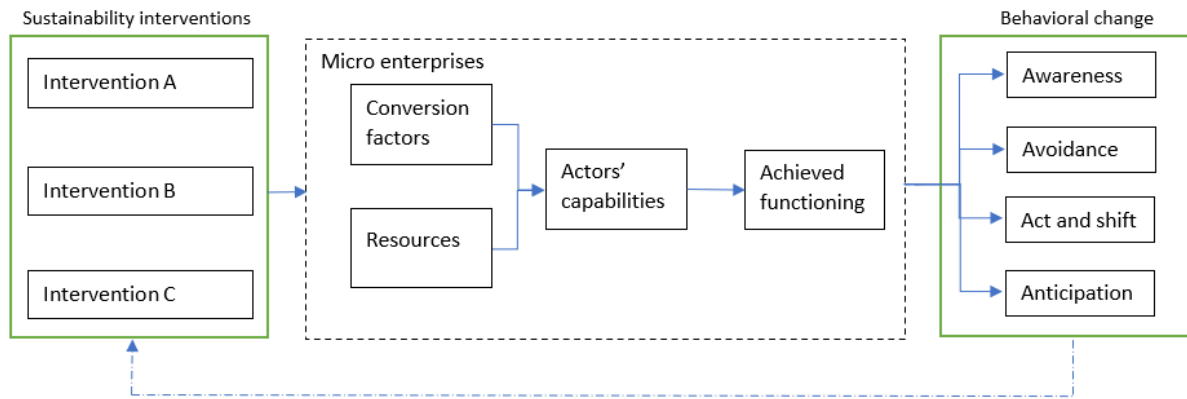


Figure 6: Conceptual model (Source: author (2021) based on Lessmann & Rauschmayer (2012))



### 3 Methodology

In this third chapter of the research we will elaborate on the research methods that have been used to gather the data needed to answer the four secondary research questions. The type of research used for this research is a comparative case study approach. Going into detail on the cases of this research, three specific aspects have to be discussed. These are the theoretical scope, the spatial boundaries and the timeframe as they together define the unit of analyses and thus the case (Yin, 2009). The theoretical scope has been defined in the theoretical framework of chapter two. This chapter will discuss a little more about the scope but will in particular define the remaining two aspects.

#### 3.1 Comparative case study approach as research methodology

This study aims to write conclusive remarks about the effects of new sustainable initiatives on the micro actor's capabilities in Dutch cities. This asks for a detailed research that explains and understands effects of new policy initiatives in specific contexts. In this light, this research uses a comparative case study approach as main research method. Yin (2009) describes the case study as an empirical research method that investigates a contemporary phenomenon ('the case') within its real-world context. Four basic types of cases can be determined. All four can be placed in a spectrum in which this research fits the holistic, multiple-case design with research done in two cities, Groningen and Zwolle (figure 7). It is holistic in nature as the unit of analysis, the micro enterprises, is single in which all types of capabilities are covered in the researched.

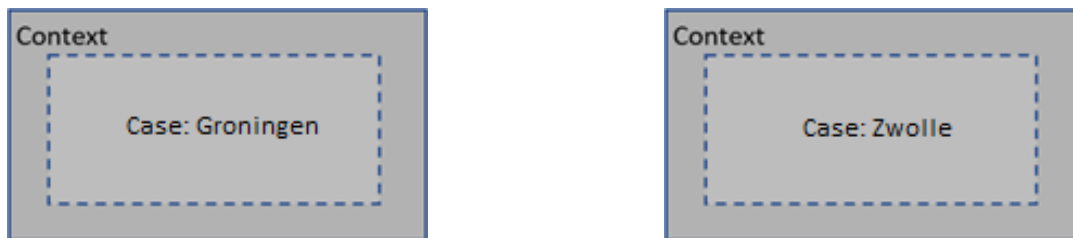


Figure 7: An overview of the holistic multiple-case design applied in this study

Various aspects make the case study the most appropriate method to use. The level of detail that can be researched by using a case study approach is most advantageous. Whereas new policies are most often focused on general circumstances, the case study can adhere the effects on a specific niche, in this case micro enterprises in urban logistics. This is in line with the strengths of case studies to explain and understand effects of new policy initiatives (Crowe et al., 2011). Moreover, does its ability to analyze sustainable urban logistics plans and its (context specific) effects on actor's capabilities suits the complexity of the urban logistics sector.

The comparison is of particular interest in research that tries to explain how context influences general intervention. By comparing the specific outcomes with the intended outcomes, initiatives can be better tailored to the circumstances. On the one hand, the actor-specific capabilities that are influenced by available resources and conversion factors play a role in the extent to which actors can adapt to the new policies. On the other hand, could the new policies be implement in slightly different ways what will be of effect on the outcomes as well. With the detailed characteristics of the comparative case study these aspects can be exposed.

### 3.2 The cases of Groningen and Zwolle

In chapter two, several policy initiatives have been mentioned to increase the sustainability of urban logistics in cities. The variety of initiatives, however, cannot be studied all as a matter of the time available. Therefore, three initiatives have been picked to further analyze. The initiatives were selected based on policy documents, visions and proposals of both municipalities of Groningen and Zwolle. Table 2 gives an overview of the three initiatives and the basic goals proposed by the authorities.

Since the Netherlands is a country with a high population density, the effects of urban logistics are of direct influence on the livability. The various mixed used areas, especially in the city centers, are subject to these issues what makes them appropriate for case selection. Thereby are the cities of Groningen and Zwolle progressive with their visions on sustainable urban logistics (Civitas, 2020; City Logistics, 2020; ULaaDS, 2020). Groningen launched its vision on sustainable logistics in January 2021, in which the zero emission zone and adjusted delivery windows are affirmed. The city of Zwolle recently announced their intentions to impose a zero emission zone in 2025 for which the specific plans will be published in the coming months/years. The recent publication show the topicality of the topic and this research.

Initiative	Explanation	Timeframe Groningen	Policy documents Groningen	Timeframe Zwolle	Policy documents Zwolle
<b>1.Zero-emission zones</b>	The introduction of areas in the city only accessible by zero-emission vehicles such as EVs and E-bikes.	2021: decision 2025: start 2030: end transition period	- Ruimte voor Zero Emissie Stadslogistiek' (Gemeente Groningen, 2021); Convenant Duurzame Stadslogistiek Groningen (Gemeente Groningen, 2018)	2020: announcement 2024: decision 2025: start 2030: end transition period	Emissievrije bevoorrading Zwolle (RHDHV, 2021a); Zero-emissie Stadslogistiek (Evofenedex, 2020);
<b>2. Delivery windows</b>	The expansion of the area in which suppliers have limited access (in terms of time) for loading and unloading.	2021: decision 2022: start	- Ruimte voor Zero Emissie Stadslogistiek (Gemeente Groningen, 2021); Convenant Duurzame Stadslogistiek Groningen (Gemeente Groningen, 2018)	2018-onwards, updates in 2020, 2023 and 2025 for EVs / clean vehicles	Actieplan Stadslogistiek (&Morgen, 2018)
<b>3. (Micro) hubs / UCCs</b>	Micro distribution centers around the city centers to deliver and collect parcels that are further distributed in a sustainable way	2018-onwards	- Ruimte voor Zero Emissie Stadslogistiek' (Gemeente Groningen, 2021); Convenant Duurzame Stadslogistiek Groningen (Gemeente Groningen, 2018)	2018-onwards	Zero-emissie Stadslogistiek (Evofenedex, 2020); Actieplan Stadslogistiek (&Morgen, 2018)

Table 2: The three initiatives and the basic goals proposed

The second aspect that needs to be further defined is the spatial boundary. As this study is a comparable study, there are two cases with each their own boundary. For the case of Groningen, this is the whole area in the inner city ring plus the Westerhaven area. This area was chosen as it is similar to the zero-emission zone that will be introduced from 2025 onwards and the extended delivery window area for 2022. Figure 8a displays a map in which the area is marked. For Zwolle, the selected area also corresponds with the intended zero-emission zone of 2025. The total surface is thereby comparable to Groningen, what is of extra value in the comparative nature of this research. Figure 8b displays the area in Zwolle.



Figure 8: Spatial boundary of the cases Groningen (8a) and Zwolle (8b)

Additionally to the geographical demarcation, it is also important to define the focus regarding the private actors that will be involved. As described in chapter 2.2.5, small and medium-sized enterprises (SMEs) can be divided in three categories. The focus in this study is on the micro enterprises located in the areas defined above. For Groningen, these are, for example, 'Houdt van Eten', Het Cadeau café or Banketbakkerij Jullens. In Zwolle, Muziekhandel Reichenbach and Sissy-Boy BV are good examples.

The third and final part that has to be determined in order to have a well-defined unit of analysis is the timeframe. The timeframe defines the start and the end of the case studied (Yin, 2009). The study was conducted from November 2020 up until June 2021. From November till February the theoretical base was set, whereafter the used methods for data collection were specified in March and the data collected in April and May. This is of special importance as the results of this research have to be interpreted in corresponds to the perception of the respondents in these three months.

### 3.3 Data collection methods

With the comparative case study and the specified cases defined, the data collection methods are the next step in the methodology. Multiple research methods have been used to gather all data needed to answer the main research question of this study. Data triangulation is a well applicable data collection technique in case studies. This mixed method methodology stands for the use of multiple sources of data in the attempt to find a comprehensive answer to the research questions (Crowe et al., 2011). With drawing on the strengths of both techniques (qualitative and quantitative), the found results will have greater validity and hence reliability. This is in the first place because of the multiplicity but especially enhanced by the overlap of methods towards well substantiated results. The next subparagraphs will give an overview of all applied techniques and its strengths that were used to get the data needed. The methods are consecutively desk research (qualitative), in-depth, semi-structured interviews (qualitative) and questionnaires (quantitative).

#### 3.3.1 Desk research

The first method used for data collection was a desk research on sustainable urban logistics. During this research both literature research and policy document reviews were done to get a better understanding of the processes in the logistics sector.

##### *3.3.1.1 Literature review*

The main aim of the literature review is to define the key concepts of this research. The key concepts sustainable urban logistics (SUL); 4 A's approach on sustainability; capability approach; capabilities; and micro enterprises are all covered in the theoretical framework. The articles used have mostly been found through the use of the scientific databases SmartCat and Scopus. The technique of snowballing was primarily used to find and select the useful sources for this research. In this process, the first stage was focused on a broad assessment of all literature available after which in the second stage a more narrowed pathway was followed. Concretely, this was done by looking into more detailed articles about, for example, the role of local stakeholders in sustainable urban logistics (instead of SUL on its own) or the trending initiatives in recent published articles. After this, again some broader research was done on the specified topic (divergent) followed by a final convergent way of analysis to define the final scope. Recent articles, for example, discussed extensive lists of initiatives that were in the final convergent stage minimized and specified. According to Bramer et al. (2018) these steps are useful to optimize the searching results and thereby the quality and comprehensiveness of your study.

##### *3.3.1.2 Policy document review*

The second part of the desk research consisted of a policy document review. The main purpose of the review is to further define and analyze the initiatives that the municipalities of Groningen and Zwolle intended to implement. There are three reasons that substantiate this. First, this is important as the context specific initiatives determine the abilities private actors will have after implementation. A focus on night deliveries, for example, will affect different abilities than a switch to zero-emission vehicles. A second reason was to conduct a first list of capabilities that might be affected. This list can be used as a starting point for the further research and data collection in both the questionnaire and interviews. The third and final reason is related to the resources and conversion factors that can be of influence on the capabilities. The policy documents will give insides about the specific context of the personal, social and environmental circumstances. Especially the social and environmental factors are important for the

comparison and further explanation about the similarities and differences between both municipalities (sub-question four). The policy document analysis is most often, and in this study as well, a study to complement other research methods (Bowen, 2009). The next paragraphs will go into further detail on these methods.

### 3.3.2 Expert and stakeholder interviews

The second data collection method that has been used are interviews. Two types of interviews, picked by the type of data needed, are used. In the first place, expert interviews are used to gain knowledge on the specific position of micro enterprises in the transition towards sustainable urban logistics. The subsequent stakeholder interviews focus on how this position is fulfilled in the cities of Groningen and Zwolle. This type also gave attention to the three sustainability initiatives and their specific application in both cities. The interviewees were primarily approached through LinkedIn. Interviewees 4 and 7 were approached by e-mail as the address was obtained through an intermediary and interviewee 8 was approached by a phone call. An overview of all conducted interviews can be found in table 3. Besides, the general contact letter can be found in appendix II and the interview guide in appendix XII.

In the first stage of the data collection, three expert interviews have been conducted. The interviewees, who are not involved in the cases, have great expertise about specific subjects in the field of research (Clifford et al., 2010). This specific expertise is needed to be able to critically assess the visions and policies of Groningen and Zwolle on sustainable urban logistics. Moreover, interviews with experts in the exploratory phase are of great value as they are an efficient and relatively low time-consuming method of data collection. The experts are familiar with the niche of micro enterprises but do have different backgrounds in the field. Additionally, the neutral position adds in general more value as there are no conflicts of interests.

The collected data of the three expert interviews was used by the five subsequent stakeholder interviews. Adding the new pre-knowledge to the stakeholder interviews results in more valuable outcomes. In the first place, the gathered knowledge from the first interviews can be placed in the perspectives of both cases. Second, with having both the opportunities and challenges in the transition already discussed, the stakeholder interviews can go into greater detail from the beginning. Apart from building the stakeholder interviews on the knowledge of the expert interviews, the aforementioned document reviews are considered as a second source of pre-knowledge. The stakeholder interviews will thereby discuss the proposed actions in the policy documents supplemented with a critical review on micro enterprises' role in this. For the case of Groningen the main focus will be on the reviewing part, whereas Zwolle will be more forward-looking and how to anticipate to specific effects.

The interviews were conducted by the use of semi-structured interview questions. Semi-structured interviews give room for interpretation by both the interviewer and the interviewees. With the semi-fixed structure of question, all essential aspects are covered in the predetermined list of questions. Moreover, does it allow for additional and unforeseen questions and remarks during the interviews (Clifford et al., 2010). This structure suits best with this study as the current limited research on the topic will most likely result in comments that were not discussed before. These comments can be further discussed in this interview format.

Interviewee	Name	Employment	Focus of interview	Type of interview	Place and time
1.	Gert Jan Prummel	Senior Coordinating Advisor Sustainable Logistics RWS, Secretary Green Deal Zero Emission	Position of micro enterprises in transition; specific measures beneficial for conversion factor; resources (finances)	Expert: face-to-face	Groningen, April 9
2.	Walther Ploos van Amstel	Professor in City Logistics Amsterdam University of Applied Sciences and co-founder of stARTwell Amsterdam Zuidoost	Position of micro enterprises in transition; specific measures beneficial for conversion factor; resources (finances)	Expert: phone call	Groningen, April 22
3.	Paul Kamps	Program leader accessibility at the Groningen-Assen region	Application of initiatives in case Groningen; position of micro enterprises in transition	Expert + Stakeholder case Groningen: videocall	Groningen, May 10
4.	Sjouke van der Vlugt	Senior policy officer for urban development at the Municipality of Groningen	Application of initiatives in case Groningen; position of micro enterprises in transition	Stakeholder case Groningen: videocall	Groningen, May 10
5.	Klaas-Yde Haarsma	Advisor/Process manager Royal HaskoningDHV	Position of micro enterprises in transition; specific measures beneficial for conversion factor; resources (finances)	Stakeholder case Zwolle: videocall	Groningen, May 12
6.	Tom Tillemans	Logistics broker at province of Overijssel	Position of micro enterprises in transition; specific measures beneficial for conversion factor; resources (finances)	Expert + Stakeholder case Zwolle: videocall	Groningen, May 12
7.	Pier Tjepkema	Boardmember (sustainability) at Groningen City Club and owner of Laif & Nuver Groningen	Position of micro enterprises in transition; feasibility perspective	Stakeholder case Groningen: videocall	Groningen, June 2
8.	Dana Zijlmans	Advisor (sustainable) Mobility at Municipality of Zwolle	Application of initiatives in case Zwolle; position of micro enterprises in transition	Stakeholder case Zwolle: videocall	Groningen, June 3

Table 3: Overview of all interviewees

### 3.3.3 Questionnaire

The third method that was used for data collection is a questionnaire. Questionnaires are especially useful to examine opinions on social/political/environmental issues just as in complex social and behavioral interactions (Clifford et al., 2010). For this research, it was used to gather data from the perspective of the micro enterprises in the city centers. Actors' level of involvement, (in)direct effects of the initiatives, abilities and willingness in the transition are some aspects included. The aim of this questionnaire is to identify patterns in opinions after which a comparison can be made with intended effects of the policy changes.

The questionnaire is divided in five blocks. An introduction block, followed by three blocks categorized on initiative (as table 2) and a final concluding block. In total, twenty questions are included in the questionnaire. The type of questions differ, from multiple choice/answer, open question to a Likert scale question format. As the questions are context specific and partly based on the policies from the municipal, there is a questionnaire specified to Groningen and one to Zwolle. Although the questions are in general the same, the adjustments contribute to especially the validity but thereby also to the reliability. The questionnaires can be found in appendices III and IV. For the design of the questionnaire, the online survey tool Qualtrics<sup>xm</sup> was used. As the respondents are all part of an own enterprise it may be assumed that they are skilled enough regarding the digitalization.

#### 3.3.3.1 Recruitment of participants

For the distribution of the questionnaire, the micro enterprises within the spatial boundaries of both cities were personally approached for cooperation. This was done by introducing the research on the basis of a flyer including a QR code to fill in the questionnaire (appendix V). In Groningen, the respondents were systematically sampled with an interval, approaching 1 in 2 micro enterprises for a period of two days. In Zwolle, closely all micro actors were approached, also for two days. The online database 'bedrijven op de kaart' was consulted to find out which enterprises had the characteristics of a micro enterprises and where they were located. Additionally, the Groninger City Club assisted in Groningen with posting an article in the Groninger Ondernemers Courant (2021). Finally, several Facebook groups and some (in)direct acquaintances were approached to help with the distribution.

## 3.4 Data analysis

The last step to finalize the methodological framework is by elaborating on how the gathered data will be analyzed. This is best done by distinguishing between the qualitative and quantitative data collection methods.

### 3.4.1 Qualitative data analysis

In the first place, the policy documents have been analyzed after which an overview has been composed in the form of a capability table. This table is used as a starting point for further analyses. The scheme with capabilities (appendix VI) is in the first place categorized on sustainable initiative. With a relation to the resources and conversion factors, the final column shows the affected A's that are defined in the theoretical framework.

Secondly, the interviews have been analyzed by first transcribing and subsequently coding the texts. The coding was done by using the software 'Atlas.ti'. Coding is an iterative process, where evaluating and structuring forms the basis of a better understanding and its meaning (Clifford et al., 2010). The process of coding started with inductive or 'open coding'. This type was applied for the first two transcripts. Thereafter, axial coding was applied to compare and combine codes from the first two transcripts and the other seven. The final code tree also has some deductive characteristics, as the base consists of theoretical findings. The code tree can be found in appendix VII.

### 3.4.2 Quantitative data analysis

The data obtained by the questionnaire has been analyzed by the use of Qualtrics<sup>xm</sup>. Besides the usefulness in distributing the questionnaire, Qualtrics<sup>xm</sup> is also a useful tool to analyze data by means of descriptive data analyses. As the number of respondents is limited, all responses can be studied in detail. This detailed analysis includes both within-case analysis and cross-case analysis to obtain the most valuable results from the available data (Ayres et al., 2003). The data will partly be presented in tables/charts with numbers and in words.

Figure 9 displays a visualization of the methodology of this research.



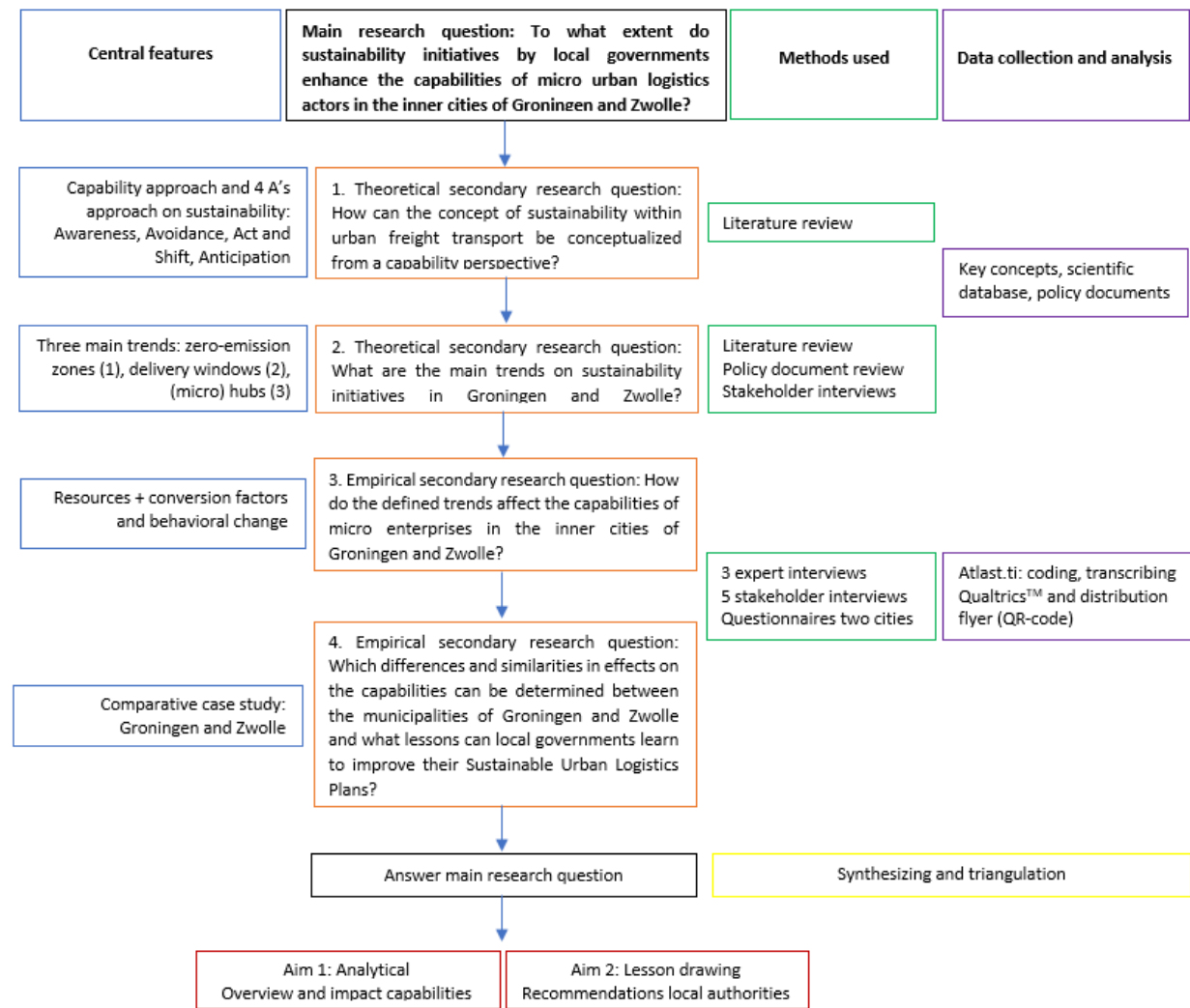


Figure 9: Visualization methodology

### 3.5 Ethical considerations

Ethics in a research is one of the most important factors to take into consideration. Clifford et al. (2010) names confidentiality and anonymity as the two major factors in ethics. Prior to the start of the interviews, the interviewees were informed about the goals and purpose of this study. This was mutually done at the moment of the interview, but also in the earlier e-mail contact with the interviewees. Additionally, all interviewees have been asked to fill in and sign a 'agreement to participate' form in which all their rights during the interview were formulated (appendix VIII). These rights included the right to record the interview (1); to use the name/enterprise of the interviewees (2) and to not answer certain question or to (early) terminate the interview (3) (appendix IX). For the quantitative part of this research, the respondents were informed about the goal and purpose of the research by an introduction. This introduction can be found in appendix III. Besides this introduction the questionnaire was fully anonymous as there is no possibility to link the surveys with a specific actor.

Regarding ethics, the current period of time in which this research has been conducted deserves some additional attention. The COVID-19 pandemic is still of major influence on our daily life and thereby also on the possibilities of doing research. Especially possibilities for physical interviews were highly limited. Nevertheless, in the first contact by e-mail, there was always the option given to have a face-to-face interview as long as the regulations and measures of the national government (social distancing) were followed.

## 4 Results & analysis

This chapter goes systematically through the results of the research. First, the two cases are discussed in more detail after which the questionnaire results are discussed per case. Subsequently, the results from the document review and interviews are presented and analyzed per defined A.

### 4.1 A state of Art: Groningen and Zwolle

#### 4.1.1 Groningen

Groningen is a city with a great diversity of facilities and services what makes it a vibrant place. The center has approximately 10780 inhabitants in the center (AlleCijfers, 2021a). As province capital and only city in the Northern part of the Netherlands with an University, Groningen is a popular and progressive city. Regarding the businesses in the inner city, there are 2155 registered within the Canal District (AlleCijfers, 2021a). Approximately 1 out of 5 is a micro enterprise (Bedrijven op de Kaart, 2021a). Figure 10 displays the city center of Groningen.

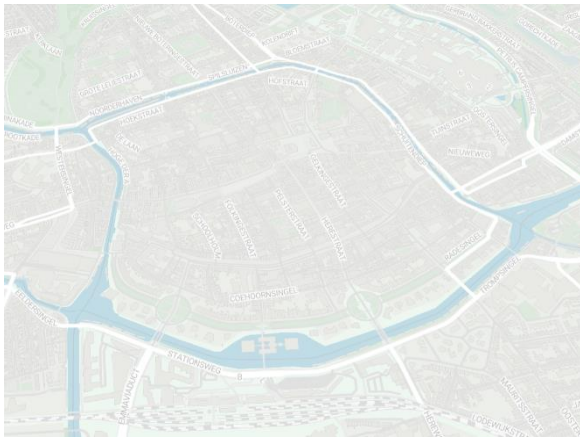


Figure 10: Inner city of Groningen



Figure 11: Signing of the covenant

To keep the city as vibrant as it should be also in the future, the municipality of Groningen launched a vision/implementation document with fifty subplans (Gemeente Groningen, 2016). Two plans are concentrated on logistics of which one is about the specification and implementation of the Green Deal – Zero-emission City Logistics 2014. A product of this Green Deal is the covenant Sustainable Urban Logistics Groningen that was signed by multiple parties in 2018 (Gemeente Groningen, 2018) (figure 11). The document consists of ten tracks that should accomplish the ambitions of the Green Deal. The ten tracks are displayed in table 4. The covenant is signed by a wide variety of stakeholders from which it can be concluded that most parties do see sufficient perspective in the plans that acknowledge the desires of those they represent (Gemeente Groningen, 2018). However, as the covenant is more a roadmap that should lead to developments in the logistics sector, the municipality of Groningen launched in February 2021 a vision document on specific measures (Gemeente Groningen, 2021). The document applied to Groningen discusses the aspects in a detailed way, what makes the document a starting point in this research towards an answer on the main research question.

	Tracks
1	Realization of uniform load- and unload policies for streets just out of the city center
2	Smarter and better enforcement
3	Intelligence and strict exemption policies
4	Stimulation of Zero-emission transport and cargo bikes
5	Stimulation of joint deliveries
6	Optimization and more sustainable food logistics
7	Bundling and more sustainable facility logistics
8	Optimization of construction logistics
9	Optimization and more sustainable waste logistics
10	Optimization and more sustainable supermarket logistics

Table 4: The ten tracks of the covenant Sustainable Urban Logistics Groningen (Gemeente Groningen, 2018)

With the slogan 'Room for you!', the municipality is steering towards a more clean and safe city center. This implies less cars, less congestion, less emissions, more greenery and public space. The implementation of zero-emission zones and other policies regarding the logistics is in this sense part of the overall desire to increase the livability in Groningen. Communicating this desire towards all the actors involved is also a more supported approach compared to just announcing drastic changes for actors' businesses. With two employees in the municipality who are working on the transition on a daily basis, the transition is tried to made as smooth as possible.

#### 4.1.2 Zwolle

The city of Zwolle can be compared with Groningen in terms of city type. Just as Groningen has Zwolle a historic city center surrounded by canals. The canal, with the inclusion of Noordereiland is therefore a logic and practical demarcation for the zero-emission zone in 2025. As province capital of Overijssel and its central position in the connection between the Northern Netherlands and the Randstad, Zwolle is keen to grow and develop. The city center has a total of 3960 inhabitants and is expanding fast. The number of business is rather stable with now 1110 in total (AlleCijfers, 2021b). The share of micro enterprises is comparable with Groningen, approximately 1 out of 5. Figure 12 displays the inner city of Zwolle (Bedrijven op de Kaart, 2021b).

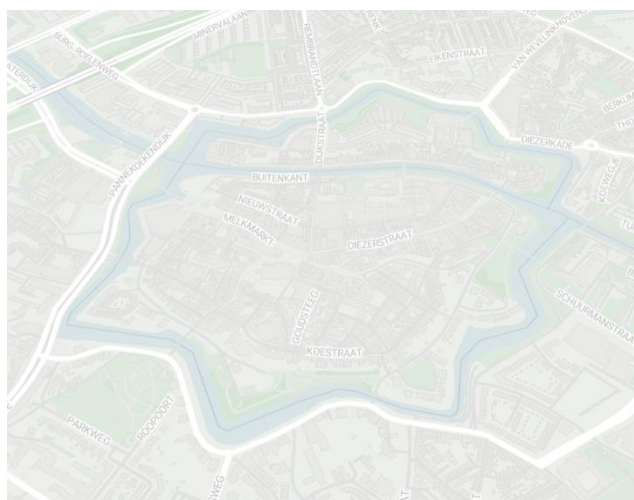


Figure 12: Inner city of Zwolle

The installation of a zero-emission zone is for now the only openly communicated action by the municipality (Evofenedex, 2020). Zwolle signed the Green Deal Zero Emission City Logistics in 2017, three years later than Groningen. As a result, a similar vision document as Groningen will be published a little later. Despite this, Zwolle does have a general timeline until the year 2025 in which the zero-emission zone should be put into practice. Aspects of this timeline are the exemptions policies, waste logistics, communication and subsidies (table 5). An important aspect that is already in use for many years in Zwolle is the 'pedestrian area'. Parts of the city center are, on specific hours, locked for vehicles by barrier marks on the street. By these barriers, there are a significant number of motorized vehicles fewer in the pedestrian area what contributes to the safety, cleanliness and hence the livability in the city. Another aspect that Zwolle has started to do research on is the possibility to increase logistics by using the waterways (Zijlmans). Although this is not zero-emission, it is an efficient alternative that would definitely contribute to a decrease of emissions. With only one employee within the municipality who is working on the topic one day a week, these developments go step by step.

<b>Measures towards 2025</b>	
1.	<b>MONITORING CURRENT CITY LOGISTICS</b>
2.	<b>BUNDLING INITIATIVES (LESSONS LEARNED)</b>
3.	<b>SUBSIDIES ZERO-EMISSION VEHICLES</b>
4.	<b>IMPROVING SURVEILLANCE LOGISTICS TRANSPORT</b>
5.	<b>CUSTOM SOLUTION SMART INITIATIVES</b>
6.	<b>OPTIMIZATION AND MORE SUSTAINABLE WASTE LOGISTICS</b>
7.	<b>OPTIMIZATION COMMUNICATION FOR COOPERATION</b>
8.	<b>OPTIMIZATION AND MONITORING 'KLANKBORDGROEP'</b>

Table 5: Planned measures on zero-emission logistics in Zwolle (Evofenedex, 2020)

## 4.2 Involvement entrepreneurs in sustainable urban logistics policies

### 4.2.1 Basic characteristics questionnaire responses

The questionnaire (appendix X) used to gather data on the micro enterprises in Groningen was filled out by 21 respondents. 50% was done through online distributing and 50% through personal distributing, with a response rate of approximately 15% (1 out of 7) for the latter. 1 response was filled out half, and is therefore deleted. An overview of the basic characteristics of the respondents is displayed in table 6. Seen the numbers, most respondents do have a retail business. The only business in the 'others' category is a caterer ('traiteur'). Having a look at the numbers of employees, it is notable that all businesses in the category 8-10 are (local) retail businesses. Seen the level of involvement by the respondents in policymaking processes is it somewhat striking to see that only 4 out of 21 respondents are above average involved.

	Categories	Respondents Groningen	Respondents Zwolle
<b>Type of business</b>	Day catering	III	III
	Evening/night catering	II	-
	(Local) retail	IIII IIIII IIIII	IIII IIIII
	Others	I	I
	<b>Total</b>	<b>21</b>	<b>14</b>
<b>Number of employees</b>	1-3	IIII II	IIII
	4-7	IIII IIII	IIII II
	8-10	IIII	III
	Others	I	-
	<b>Total</b>	<b>21</b>	<b>14</b>
<b>Level of involvement in (general) policy development</b>	Not involved	IIII I	IIII
	Little involved	III	IIII
	Fairly involved	IIII III	II
	Quite involved	III	IIII
	Highly involved	I	-
	<b>Total</b>	<b>21</b>	<b>14</b>

Table 6: Basic characteristics respondents Groningen and Zwolle

With 14 respondents to the questionnaire in Zwolle, the response was a little lower than Groningen (output questionnaire appendix XI). The lower number of enterprises in the Zwolle could explain this. Two respondents were approached online and the other ones personally, with a response rate of approximately 20% (1 out of 5). Table 6 also gives an overview of the basic characteristics of the respondents in Zwolle. Just as in Groningen are most respondents running a retail business. Relating these numbers to the number of employees, there is no direct link visible. Another notable fact is that there were no respondents in the category of evening/night catering. This can be explained by the notion that this type of business is underrepresented in the geographical area. It can also be explained, as this was an often heard argument while recruiting respondents, that these businesses are dependent on external (third) parties regarding their logistics. As a consequence, they are not concerned about the transition and its effects on their business. The only business in the category of 'others' is active in the field of business services.

#### 4.2.2 Groningen micro enterprises' questionnaire results

The general responses from the questionnaire have been discussed in the section above, whereas we discuss the results in more detail in this section. Having a look at the knowledge level on the three initiatives, most entrepreneurs are quite acquainted with the initiatives. Comparing the three initiatives in Groningen, the (micro)hubs are most often answered with no or just little acquaintance. Presumably, because there are no clear policies on hubs yet. Table 7 gives an overview of the responses to the level of acquaintance. Out of the 21 responses, these numbers are rather low. Logical, the respondents who are in this category, also answered in most cases that they are not or only to some degree involved in the policymaking processes of the municipality.

	Zero-emission zone		Delivery windows		(Micro)hubs	
Cities	Groningen	Zwolle	Groningen	Zwolle	Groningen	Zwolle
Not acquainted	I	I	II	III	IIII	I
Little acquainted	II	II	-	III	III	IIII
Fairly acquainted	IIII III	IIII II	III	II	IIII II	IIII
Quite acquainted	IIII II	III	IIII IIII	IIII	III	III
Very acquainted	III	I	IIII I	I	II	I

Table 7: Number of respondents in the lowest acquaintance levels on the three sustainability initiatives in Groningen and Zwolle

##### 4.2.2.1 Impact zero-emission zone on entrepreneurs' capabilities

Most entrepreneurs expect that the implementation of zero-emission zones will have significant implication on their business. However, the results on the most discussed initiative towards 2025 are diverse. Although just one respondent answered with no effect, the other options are picked with high variety. A notable relation with those who expect a rather little effect is that these respondents are also not aware of all the ins and outs of the introduced zone. Moreover, those who expect a significant effect are relatively more involved in the decisions regarding the zone.

When further analysing the data related to the zero-emission zones, there is also a relation found between the effect of the zone on entrepreneurs' capabilities and the new clean vehicle to be purchased. Those who expect the greatest effects are also the respondents who mention that they will need at least a delivery van or bigger. For them, a cargo bike (electric or not) is not an option as this will negatively affect their capabilities.

##### 4.2.2.2 Impact delivery windows on entrepreneurs' capabilities

The expected effects of adjusted delivery windows compared to a zero-emission zone is for most respondents similar. However, some interesting insides on both the purchase of electric vehicles and changing/flexible staffing are detected by these respondents. Firstly, despite the expected high effects, only two respondents expect a significant impact on the capability of staffing. From these two, one mentions in a comment that this will be a consequence but not a consequence that's difficult to overcome as their staff is flexible enough. Hence, an effect on their capabilities is not expected by this entrepreneur.



Interesting is that both respondents already have an electrical vehicle in use. With this first step made, they are likely to better evaluate the impact on their capabilities. Moreover, adding to the point made above on the respondents who need at least a zero-emission van, just two of them need a zero-emission truck. One of these respondents is thereby driving an Euro 6 emission standard with which he can make use of the transitional arrangement to 2027. The impact on the capability to purchase a zero-emission vehicle is thereby considered reasonable by the respondents. This effect of the additional time refers to the A of anticipation of new technologies the coming years.

#### *4.2.2.3 Other policy impacts on entrepreneurs' capabilities*

Most respondents agree with each other on the probability questions on how the proposed initiatives will impact the efficiency, service level, competition and secondary sustainability initiatives. Only one respondent thinks that the introduction of (micro) hubs would work efficient for his or her business. Moreover, just two respondents believe that parcel lockers would be an outcome for future deliveries. Thereby, despite the fact that the actors do not believe in the efficiency of the hubs, six out of the twenty-one responses believes that their service provided will remain good and thus does not substantially limit their range of possible functioning. Regarding the competition with other businesses, most respondents are not scared by a weaker position, as only four respondents are concerned on that one. This also applies to the possible decline in other sustainability investments in the business since only one respondent names this as an issue. Linked to the capabilities, does this mean that the available resources for secondary investments are not directly affected.

#### *4.2.3 Zwolle micro enterprises' questionnaire results*

The general results of the level of acquaintance with the three initiatives in Zwolle is comparable to the responses in Groningen. As in Groningen, most respondents do have a basic acquaintance with the zero-emission zone. The acquaintance with the delivery windows, however, is rather low with a total of six respondents out of the fourteen in the lowest category. In a quick analysis might the naming of a delivery window be the reasons since Zwolle is making use of a 'pollergebied'. The hubs, on the other hand, are known by most respondents. An overview of the numbers is displayed in table 7.

##### *4.2.3.1 Impact zero-emission zone and delivery windows on entrepreneurs' capabilities*

The degree of impact the zone will have on respondents' capabilities is divided. Thereby, no cross-links are found with, for example, the level of involvement in policymaking processes, knowledge levels or business size. The effect of delivery windows on the business will be limited according to almost all respondents. The conversion factor related to the level of acquaintance with this measure might play a role here. Just as the familiarity with the 'pollergebieden' that has been the standard for many years already. Hence, the effect of expanded delivery windows on the actors' capabilities would therefore be minimal.

##### *4.2.3.2 Impact subsidies and sharing e-vehicles on entrepreneurs' capabilities*

Four out of the fourteen respondents do think that the subsidy up to 5.000 euros would be sufficient. Interesting here is that two of these respondents already have an electrical car in use, both lease cars. Moreover, a third respondent does not have and will not need a zero-emission vehicle seen his business model. Related to those respondents who do have an electrical vehicle in use already, there is only one extra and this respondent does not agree with the opinion that 5.000 euros subsidy is sufficient. Furthermore, where they do agree on, is that all three are not willing to share their electrical vehicle. Note here is that this is primarily because the zero-emission car is a lease car. Since lease contracts are personal,



the contracts are likely to negatively impact the actors' capabilities to cooperate in the transition. One respondent adds a notion that sharing a cargo bike, if available, might be an option. Another interesting result on the vehicle use, is that no respondents will be dependent on a zero-emission truck. A (electric) cargo bike or van would be sufficient.

#### *4.2.3.3 Impact (micro) hubs on entrepreneurs' capabilities*

Regarding the introduction of (micro)hubs, most respondents think that a hub is unlikely to be efficient for their business. This would be of direct impact on the economic (sustainable) capability of efficiency. Nevertheless, three respondents do think that a hub will be highly efficient. Striking here is that out of these three, only one believes that the service provided will remain good. This opinion is shared with two other respondents of which one already has a zero-emission vehicle and the second one is active in the field of business services. The paradoxical output might be explained from the different impact on the individual capabilities compared to the overall efficiency in the area. Thereby, are parcel lockers, just as in Groningen, all criticized and unpopular as a possible development in the last-mile delivery.

#### *4.2.3.4 Other policy impacts on entrepreneurs' capabilities*

Analysing the intended effects of the three initiatives on either the competitiveness or the possibilities to improve the sustainability elsewhere in their business, most respondents agree with each other that this won't be an issue. Apart from some respondents who can't foresee the impact in a few years, one specific actor is highly curious. This is related to the fact that the respondent transports specialized and fragile cargo, all around Zwolle very frequently. For him, the impact on the capabilities is already clear, whereas the others still act in the unknown.

### 4.3 From intervention to behavioral change

With the first effects of the new policy initiatives on the actors' capabilities in the section above, this section will systematically go by the 4 A's of sustainability. This is in particular done by focusing on the data gathered with the interviews that gives insides on the inclusiveness of the envisioned policies. Inclusiveness that reviews the degree to what the set boundaries by the policymakers align with the capabilities of the (micro) entrepreneurs. After each paragraph, the analysis shows if the initiatives acknowledge the micro enterprises' capabilities. Capabilities that, indirectly, should lead to the behavioral change as conceptualized in this research.

In the paragraphs the interviews are often cited and used in the argumentation of a certain assertion. In the text there is only referred to the specific interviewee. Therefore, the next table 8 gives an overview of all interviewees and the linked appendix, as this is where the transcripts can be found.

Interviewee	Employment	Appendix number
Prummel (Gert Jan)	Secretary Green Deal Zero Emission	XIII
van Amstel (Walther Ploos)	Professor in City Logistics UVA	XIV
Kamps (Paul)	Program leader accessibility Groningen-Assen region	XV
Van der Vlugt (Sjouke)	Municipality of Groningen	XVI
Haarsma (Klaas Yde)	Advisor/Process manager Royal HaskoningDHV	XVII
Tillemans (Tom)	Logistics broker at province of Overijssel	XVIII
Tjepkema (Pier)	Board member Groningen City Club and micro entrepreneur in Groningen	XVIV
Zijlmans (Dana)	Advisor (sustainable) Mobility at Municipality of Zwolle	XX

Table 8: Interviewees, employment and appendix number

#### 4.3.1 Awareness

Awareness is the first step in the transition and is at the basis of actors' ability and willingness to invest. Therefore it is of importance for all the capabilities defined. The municipality tries to create awareness by initiating actor meetings, webinars on the transition and other participation formats. To the question if these initiatives are successful, the municipality is moderately positive. At a special organized meeting for businesses, 20 out of the possible 1000/1500 business were present. Moreover, the municipality of Groningen organized two general walk-in meetings with respectively 32 and 45 participants present. Seen these numbers you would say no, but by comparing this with similar meetings this is among average (interviewee Van der Vlugt). This given does fit the next response of logistics-broker of the province of Overijssel:

*“Awareness, it is already there, but how to operate it is yet unclear” (Tillemans)*

The questionnaire underlines this given as most respondents do have a basic acquaintance with the new initiatives as discussed in paragraph 4.2. The positive attitude towards sustainability developments was also an often noticed point during the recruitment of the respondents. The proposed sustainability initiatives by the municipality, however, do not benefit from this positive attitude per se. The operation especially needs an extra translation with a street-level focus. Multiple interviewees mention this, among others interviewee Tjepkema. He questions the current participation approach by the municipality against the sense of urgency by local actors. The policymakers often refer to a phase 'in progress' whereas experts in the field hammer on the step to sketch the ultimate benefit for the specific entrepreneur. Interviewee

Haarsma refers to a just published research about economic impact on local businesses of investments in bicycle and pedestrian infrastructure by Volker & Handy (2021). Such research makes comparisons between the old and the new. The critical part here is that such insights need to reach the enterprises in the cities. Only then the capability to act with a sufficient level of knowledge on the transition can be enhanced.

According to interviewee Kamps the available four years before the implementation of the zero-emission zone is there to accomplish issues like this, especially with the micro enterprises. These enterprises do not have an employer working 40 hours a week on the sustainability transition. They need to be taken by the hand and guided towards 2025. This guidance, however, could be performed sharper, according to interviewee Tjepkema. Issues as missing reports after meetings (after which the new policies are already approved by the council) should be directed sharper. A more involved positioning in this adds to the level of awareness and urgency by actors, and increased trust between both parties. This would ultimately lead to a continuation of the usual business, despite some minor changes.

Although the coronavirus might have been a setback in the process for the entrepreneur, it has also given opportunities. The digitalization, such as online webinars, are now used as catchy platforms to inform actors on the new situation. As it is less time-consuming and easier to access, the attendance are likely to increase compared to physical meetings. A final issue that was often heard while distributing the questionnaire, was the level of self-consciousness and the attempt to distinguish within the branch. As especially local businesses have to stand out in relation to the established brands, sustainability is a more and more picked niche to excel. With sustainability as a topic that is increasingly higher valued by consumers, it clearly adds to the awareness.

Awareness, in literature mentioned as the first step in the operationalization of sustainability (Macharis & Kin, 2016), is linked to all actors' capabilities. The challenges arise in the link between actors' capabilities and the current provided services to convert this awareness into visible actions. Partly, this is because of the lack of resources. But it is also because of lacking (social) conversion factors that should provide more convenient conditions to enter the transition. The current provided perspective towards 2025 lacks awareness of the micro actors' position resulting in moderate trust. Resulting in a situation where the actors do not proactively join the transition. This is an aspect that can be improved by the public actors through clarity and transparency on their policymaking.

#### 4.3.2 Avoidance

Avoidance, in which the focus is in particular on efficiency, is one of the most challenging parts to regulate. Avoidance is about bundling and/or sharing logistics activities, for example with hubs, to be able to execute the same number of transactions with less impact on the physical environment. On the individual level, the efficiency is already high what makes it for most business not the highest priority from an economic perspective. However, it will have great positive effects on the social sphere related to the livability in cities. The questionnaire results show that from the perspective of the own business, hardly any respondent is positive about the efficiency of (micro)hubs. The related outcome on the question if respondents were willing to share a vehicle (combined both cities just 7 respondents) strengthens this. Respondents often refer to the utopian idea of sharing vehicles. Issues like irregular times of usage, different types (size), freedom and trust are some examples mentioned. Also the number of delivery vans, displayed in figure 13, shows that avoidance in that sense is not integrated in the sector yet. In the argumentation and results, however, a paradoxical issue can be detected.

Single capabilities like the ability to purchase a zero-emission vehicle or make efficient use of a (micro) hub are challenging to achieve. As mentioned by, for example, interviewees Van Amstel and Haarsma will these capabilities be reached earlier when the number of investments (willingness to) increase. This is the classic supply and demand mechanism in the market economy. So, on the one hand actors do not want to invest, but on the other hand if many actors make an investment, it will earlier suit the capabilities. And again, referring to the section above, the awareness on this principle is already there but the present conversion factors are weak.

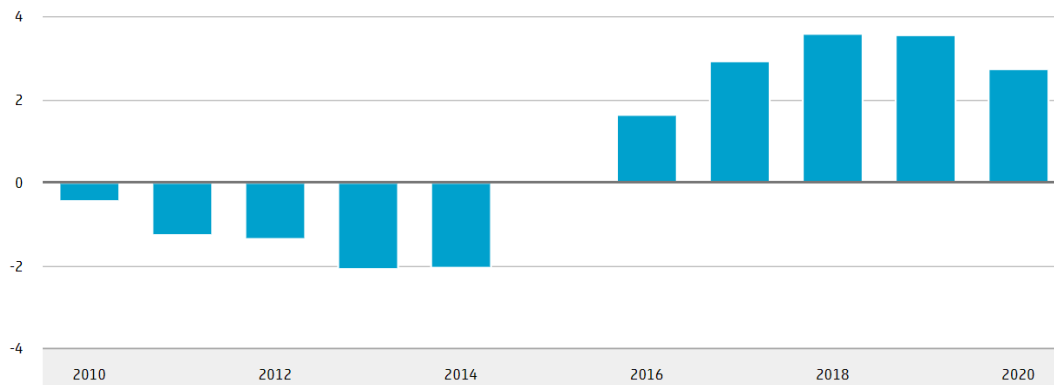


Figure 13: Course of number of delivery vans per year (% change from a year earlier) source: CBS, 2021

Related to the capability of service that can be provided, interviewee Prummel reacts critical to the effect of the number of delivery vans. A major cause, the option for free return in the online ordering of goods and services, is approaching the point that it becomes out of question and outdated.

*"Free returning? No, logistics just isn't for free!" (interviewee Prummel)*

With its effects on both the social and environmental spheres, changes have to be made. A possible compromise could be achieved by (micro)hubs. In literature it became clear that most private actors lack resources to fully initiate a hub or UCC. The interviews with both municipality of Groningen and Zwolle, however, showed positivism on this as there are multiple parties interested in the facilitation of these hubs. One major point of interest here, are the possible exemptions for various actors as these exemptions play a crucial role in the viability of hubs. In case a hub is not the most favorable option (financially), actors and consumers will not make use of it what effects the efficiency and profitability. This was, according to interviewees Kamps and Tjepkema also the reason for the failing hub in Eelde a few years ago.

*"Hubs only work when they are used extensively and massively" (interviewee Tjepkema)*

Back to the capabilities of the micro enterprises, there is hardly any actor who is able to initiate an own hub. However, there are actors who run their 'individual hub', although the form is a little different. Interviewee Haarsma warns for the naming of a 'hub', as different structures in businesses can work similarly to a hub. During the distribution of the flyers, some actors mentioned an extra stockroom somewhere else in the city. Moreover, a second branch in another city or somewhere out of the inner city can function as a (micro) hub as well. These possibilities, though, only apply to a limited number of actors and hence have minimal effect on actors' capabilities linked to (micro) hubs.

To conclude, the current policies on avoidance are in essence suitable in the field of logistics. However, from the perspective of the micro actors it's extremely challenging to join these policy plans individually. The most crucial factor for avoidance is the scale level. With the lacking resources by micro actors, (provided) conversion factors should be better tailored to the actors' capabilities. Possibilities to join hub services, for example, with all (micro) actors in the street or branch. The municipalities are progressing on these items, but at this stage it is underdeveloped.

#### 4.3.3 Act and shift

##### 4.3.3.1 Modal shift

Act and shift, either a modal shift or a shift in time (off-peak hours), is the category that has the biggest impact on the actor's capabilities. The modal shift (the zero-emission zone) is most prominent in the policy initiatives and planned to be implemented in 2025. The four-year timeframe is for most actors of greatest effect on their capabilities (interviewee Van Amstel). According to interviewee Van Amstel, is the planning for most actors impracticable and 'wishful thinking' by policymakers. In the current stadium of the transition is still a lot unclear regarding the provision of information what impacts the capability to make choices with enough information. Thereby do actors lack resources, and is for most actors the available subsidy insufficient.

*"€5000,- will not be sufficient, as zero-emission cars are very costly. As an entrepreneur you then have other priorities on which you have to spend money" (respondent X questionnaire Zwolle)*

*"And then municipalities expect that entrepreneurs will soon go from that secondhand van of €2000,- euros to ZE vans of €62,000,- euros. That's a very challenging issue" (Interviewee Van Amstel)*

An interim solution might be an outcome. Firstly, actors might purchase a car with an emission standard that is allowed to drive till 2027 or 2030. Secondly, secondhand electrical vehicles can also become an option as these are cheaper and directly available. This tip was given in the webinar on city logistics in Overijssel (appendix XXI). The limited axis radius is the biggest disadvantages of these secondhand types. Whether this disadvantage outweighs the options made available on the overall capabilities is actor specific.

Cargo bikes, whether electric or not, would be a cheaper alternative. In Groningen, the questionnaire results show that for eight respondents a cargo bike would be sufficient, whereas ten respondents at least need a cargo van. So, seen the capabilities of the actors, a focus on cargo bikes is not the perfect solution. The same applies to Zwolle as the results show a 50/50 outcome for the modal type. Adding to the willingness, besides the impact on the resources several actors do also see issues on the environmental conversion factors. Charging stations, load- and unload areas and parking spaces for e.g. cargo bikes need to be facilitated by the municipality.

Seen the abilities and the impact on the capabilities, actors often make a direct comparison with the present and the 'end product'. A transition, however, is called a transition as the new situation will be achieved step by step. The to-be-made steps over the years are all seen as difficult and challenging, what only makes the threshold higher. The SPES network is introduced to assist with these steps. The network is an expert pool on city logistics that consults by knowledge and expertise but also by financial support for (pilot) projects and research (Zero Emissie Stadslogistiek, 2021) (appendix XXII). In the final part of the webinar on city logistics in Overijssel, one micro enterpriser gave a take-home message on this step as well:

**“Make that first step, it doesn’t matter how big the step is for now, but show your willingness and start”. (participative participation, appendix XXI)**

The role of the private actor is in particular important for the speed of the transition. And as many interviewees, among others interviewees Prummel and Kamps, mention, the transition is already there. We are heading towards a specific outcome in the development, so take part as in collaboration the thresholds will decrease and hence the related capability will be impacted least.

That the transition is already there and heading into a specific direction becomes also visible in the development in numbers of electrical commercial vehicles. As can be seen in figure 14, the numbers are clearly increasing with a 40% increase in electrical vehicles in 2020 compared to 2019 (CBS, 2021). Although the development is based on national numbers, the visible trend also applies to Groningen and Zwolle. The increased production will result in a decrease in price of the vehicles, what is of positive effect on the actors’ capability to purchase a car. It will also give more opportunities regarding secondhand cars.

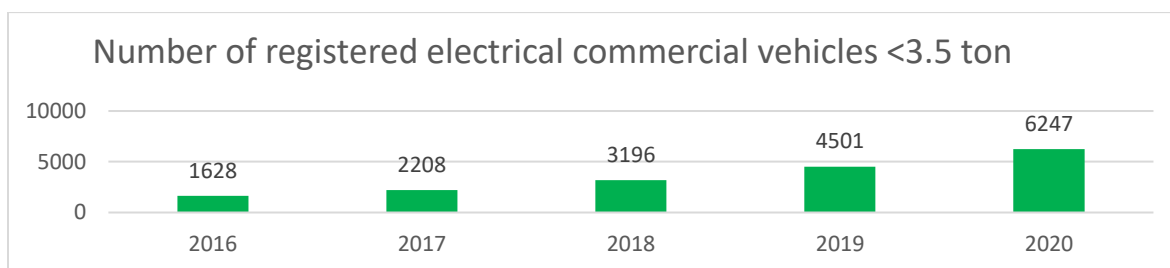


Figure 14: Zero-emission vehicle development (RVO, 2021)

#### 4.3.3.2 Shift towards off-peak hours

The second type of shift, towards off-peak hours is at this moment a less discussed shift. The current delivery windows are for Groningen from 5am-12pm, and for Zwolle 6am-12pm. However, with the current noise pollution regulations it is only allowed to load- and unload from 7am onwards. Hence, 24/7 deliveries will, with the noise of the current delivery vans not be an option. So-called silent vans or trucks could be a solution but will highly likely start with deliveries outside the city centers. Moreover, for the micro actors in the city center night deliveries are in general undesirable as they do not have the employees for these timespans, plus the wages will be higher (Macharis & Melo, 2011). At this moment, off-peak hours will thus have only negative impact on actors’ capabilities to shift delivery modes. Regarding the increased delivery window area, imposed from 2022 onwards in Groningen, seven respondents of the questionnaire mention that this will have great impact on their business. An often seen reason is the increased number of vehicles that will be in the center in the morning. From the perspective of the actors this is undesirable as it will highly likely affect the capability to (un)load as quickly as normal. Public actors, on the other hand, question to what degree the higher number of vehicles is undesirable. The positive effects for the other hours of the day might outweigh the negative aspects (interviewee Haarsma). Weighing the advantages and disadvantages on the overall set of capabilities to shift delivery moments is challenging and depending on the specific actors’ context.

In conclusion, the modal shift is most central in the policy initiatives but also of biggest impact on the actors’ capabilities. The prices of the zero-emission cars are in this stage too high, and at the same time is a cargo bike not an appropriate replacement for most actors. Opportunities, however, only arise when (little) steps are being taken. The level of willingness is therefore a positive aspect for the years towards 2025. A shift towards off-peak hours is an almost all parts an undesired shift in this stage of the transition.

#### 4.3.4 Anticipation

This final category is focused on the technological developments and is thereby linked to the impact on the capabilities of micro entrepreneurs for the transition-years laying ahead. In the interviews with the policymakers of both cities the assumption that technological developments will be of positive effect was often referred to. Comparing the current development of electrical vehicles with four years ago (or the recent transition of electric buses) is cause for optimism. For the actors' capabilities this is, however, two-sided. On the one hand, the optimism applies also for the actors, as four years (and for some even six or nine years) is still a lot of time for developments in their favor. This, though, has an effect on the sense of urgency that actors feel to implement changes in their business operations. An aspect that impacts the speed of the transition indirectly. On the other hand, contracts with distributors and other partners are most often for a longer period of time. Therefore, some choices have to be made already now. In most cases, this will negatively impact the capabilities compared to changes that only have to be made in 4 years (or later).

An aspect the zero-emission is the transitional arrangement that was introduced to increase the suitability of the initiative for all actors involved. The timeline with the exceptions and exemptions is displayed in figure 15. The decisions for these years follow the national guidelines and are based on the availability of the different zero-emission vehicles. According to interviewee Haarsma, this could mean that if there are not enough vehicles available by the timing being, postponement or additional exceptions are optional.

The (future) costs of the vehicles are included in the arrangement as well. For most actors are the costs of biggest impact on their capabilities. Adding on the above mentioned optimism, is the future regarding costs also positive. A recently published report by BloombergNEF (company specialized in EV analysis), argues that from 2026 or 2027 the costs for driving electrical vehicles will be cheaper compared to cars on petrol/gasoline (BloombergNEF, 2021). The lowering of the prices for the batteries is the main reason. Although these numbers are based on passenger cars, it gives a reliable indication for logistics vehicles.

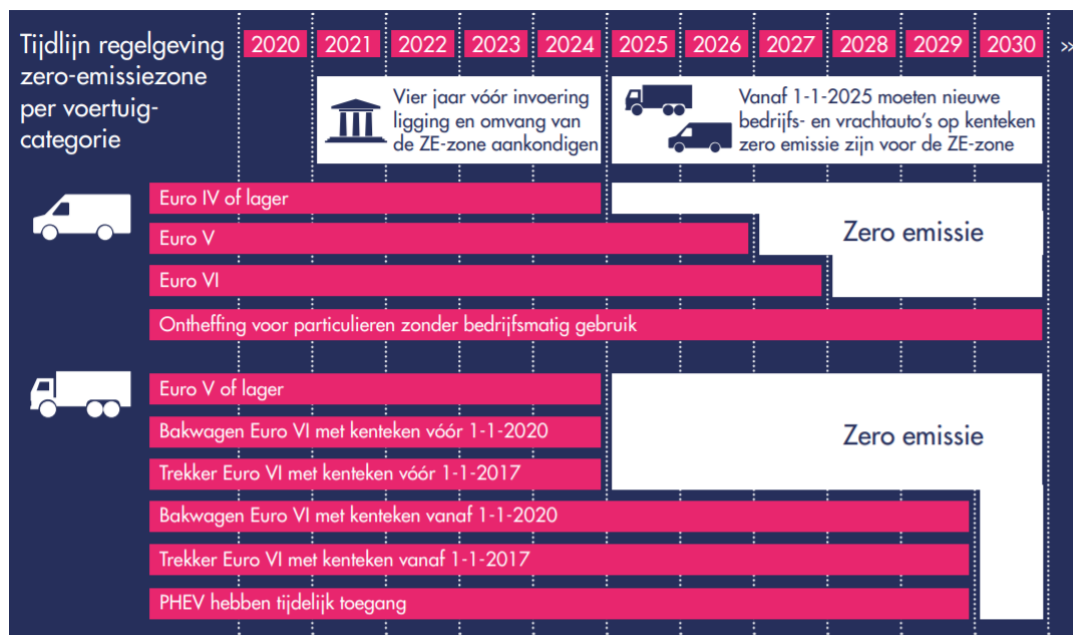


Figure 15: Transitional arrangement ZE vehicles (Gemeente Groningen, 2021)



The idea that the transitional arrangements are based on availability and expenses is interesting on itself. Since the arrangement is a national guideline, the effect on the local capabilities differ. Zwolle, as an example, start with monitoring all in- and outgoing transport with cameras for the upcoming years (interviewees Zijlmans & Tillemans). The data gathered from these cameras could be used for more local-based policies in favor of the actors' capabilities. Often signaled cars could be left out of the arrangements whereas less often signaled cars might get an exception.

Besides the availability and costs, the delivery time (waiting time) is another aspect to keep in mind. At the SPES-organized event on the transition to zero-emission in Overijssel, various actors either complained or warned for the delivery times as these could easily be over six months (appendix XXI).

Apart from the relatively short-term period up to 2030, is the overall development of the transition towards 2035 and further also of importance for micro enterprises. Although the impact of the current transition on the micro enterprises' capabilities is significant, for some actors the impact would, paradoxical, decrease when the transition is scaled up. A bigger zero-emission zone and extended delivery window, resulting in a greater dependency on (micro) hubs would increase the value of the current initiatives. The increased reliability would positively affect (the speed of) the transition. Currently, this desire is already visible at the frontrunners like PostNL (Van Amstel). The shift towards zero-emission as the *new normal* would result in a context that is totally zero-emission based. With a context of sustainability driven conversion factors, focused on the capabilities of the (micro) enterprises, the actors would highly likely be better adapt to the new circumstances.

#### 4.3.5 In summary

The cities of Groningen and Zwolle are both ambitious in their stance towards sustainable urban logistics policies. The questionnaires show that the policies affect the actors' capabilities. Related to the level of acquaintance, are the zero-emission zones likely to be of most impact. The delivery windows and (micro) hubs are also of significant impact.

Related to the awareness, most actors are willing to take steps on sustainability, but the current policies are on several aspects not within their abilities. Either resources are missing conversion factors are central here. For avoidance, the missing conversion factors are of greatest impact. Efficiency on actor specific level is fairly there, but in the broader system improvements can be made. Platforms or other cooperative measures to provide this are currently lacking. Act and Shift is of greatest impact on the capabilities, with the lacking resources for the purchase of an electric vehicle as main challenge. Alternative (cheaper) options as cargo bikes and sharing-vehicles are for most actor undesired solutions. Anticipation is for the entrepreneurs (and their capabilities) most promising as the technological developments are likely to be of positive effect on their capabilities. The rapid developments, though, decrease the feeling of urgency what negatively effects the speed of the transition.



## 5 Conclusion and discussion

The title of paragraph 5.1 is the slogan (in Dutch) on the flyer that was distributed in both cities. It shows the essence of this research and is a simplification of the main research question *“To what extent do sustainability initiatives by local governments enhance the capabilities of micro urban logistics actors in the inner cities of Groningen and Zwolle?”*. The findings of this research can be used in the operationalization of the new initiatives on urban logistics in inner cities. In the complex arena that a city is, support from all the actors in the arena is of most importance for the functioning of the city. Reviewing the micro actors’ capabilities as specific niche therefore adds to the current evaluation tools based on economic value and general actors in the field (Macharis et al., 2012).

Besides answering the main research question by discussing the findings of this study in relation to the theory and the conceptual model (p. 20), this chapter also provides some recommendations for further research as well as some policy recommendations.

### 5.1 The city center on-lock, how big is the shock?

The new policy interventions, initiating the transition in sustainable urban logistics are designed in cooperation with present interest groups. Although the policymakers claim the inclusiveness of the policies, the ambitious level of the interventions leaves room to question this.

At this moment, exactly halfway the year 2021, the zero-emission zones are planned to be implemented in three and a half years. More and more newspapers publish on it, conferences are organized and it becomes visible on the street by billboards and posters. It indicates that the zone will have impact on the street level. For various city, including Groningen, are the details on the zero-emission zones already known. The operationalization of these policies by the micro actors, however, brings challenging issues with it. The uncertainties in terms of time on the one hand and the insecurities on cooperation on the other hand are two major issues.

At the current state of the transition, too much pressure is put on the capabilities of the micro actors. With the transition in three and a half years, however, there is time to reduce the (negative) impact on the capabilities. Though, for some aspects decisions have to be made in this early stadium, what increases the pressure on actors’ capabilities. Among others on the capabilities of acting with sufficient knowledge and having the ability to invest. Cooperation, ideally in the form of platforms on logistics, accompanied by technological developments will most likely add on enhancing the capabilities in the changing situation.

The role of conversion factors, in particular social and environmental, are of crucial importance here. The conversion factors, external in nature, facilitate in the ability to take the necessary steps in the transition. Missing factors, primarily on facilitating in this stage of the transition but also on future developments adding on a fair future perspective (especially in the current circumstances with the pandemic) do not enhance the capabilities.

The impact of the extended delivery windows, in Groningen from 2022 onwards, is in general of less impact on the actors’ capabilities. The new situation only applies to a part of the current inner city as the majority of entrepreneurs have to deal with the windows already now. However, from an individual perspective the extension is keen to cause conflicts related to the available capabilities. These conflicts are of impact on the ultimate achieved functionings, as the individual entrepreneur might not be able to (un)load on the

same time all days of the week. Cooperation with all actors in the spatial boundary would result in the optimal utilization/conversion of the available capabilities into achieved functionings.

The (micro) hubs is the initiative the actors are least acquainted with. They question the efficiency of a hub. Efficiency not only focused on logistic efficiency but on all process in the business. This negatively affects the actors' capabilities. Moreover, are the micro actors not able to initiative a hub themselves, what makes them dependent on other business. At the current state of the transition does this dependency entails a lot of uncertainties. Therefore, the hub on itself is in most aspects of negative impact on the actors' capabilities. However, a hub in combination and as part of the solution on the challenges that come along with the zero-emission zones and delivery windows could cause overall enhanced capabilities.

So, in conclusion, the actors' capabilities are affected by the new imposed sustainability initiatives by local authorities. To what extent this will be at time of implementation in 2025 is dependent on various characteristics of businesses. As the transition has already started, it is important for micro enterprises, but also for frontrunning enterprises to join forces and cooperate. In combination with the technological developments the degree to which capabilities are negatively affected can be minimized.

## 5.2 Reflecting on micro actors' capabilities in the urban logistics sector

With zero-emission zones, time windows and (micro) hubs, three main policy interventions were critically reviewed in this research. The research focused on the perspective of the micro-actors located in the inner city and their position in the sustainability transition. Context dependency, actor-specific measures and justice have been central themes in the review. In this, the research shows that the to be implemented interventions are likely to impact the micro actors' capabilities on all four action based aspect; Awareness, Avoidance, Act and Shift, Anticipation.

### 5.2.1 Time as a critical variable

When linking the capability approach to logistics, especially in the way how it is defined in the conceptual model of this research, the aspect of dynamics is of significant importance. As mentioned in the theoretical framework can dynamics be divided in time and uncertainty. The future defined in sustainability theories is often related to at least one generation what counts for approximately 25-30 years (Lessmann & Rauschmayer, 2013). European (Paris Agreements) and national (Green Deal ZE) policies aim for a significant reduction in emissions by 2030 (Rijksoverheid, 2021). These goals were already agreed on in 2015. The proposed steps towards 2030, however, are subject to uncertainty. Uncertainty that is of direct impact on actors' capabilities. Thereby does the mechanism of supply and demand play an important role as actors' capabilities will enhance when more actors join the (then accelerating) transition.

Almost all capabilities in the capability scheme of appendix VI need action in the short term. The business models of the actors, however, do not all have the room, or capability space to perform these actions. The questionnaire shows that for most actors the lacking resources in the form of capital is the direct cause. Indirect causes are among others the lacking sources of information and uncertainty on the technological developments (interviewees). This is also why various actors do not feel the urgency, or are not interested in making changes at this point in the transition. The corona pandemic has clearly affected this, although a distinction should be made on the impact per sector. As the impact on the local enterprises, and especially the catering business is evident, various bigger companies have not been negatively affected per se (interviewee Van Amstel). This could also be of positive effect on the transition. Frontrunning companies like PostNL and DHL have seen a clear increase in the online ordering of goods and services. The profits can be used to, for example, initiate (micro) hubs. In case micro enterprises in city centers can join the operations at these hubs, it would positively affect their (individual) capabilities.

In the long term, the impact of zero-emission zones, delivery windows and (micro) hubs are likely to have a positive effect on actors' capabilities (interviewees Prummel and Kamps). The rationale of the new initiatives goes beyond just logistics, as it is focused on increased livability and safety creating a city center that is a *place to be* (interviewee Haarsma, Gemeente Groningen, 2021). This is also how the actors are approached in the consultation on the transition. Increasing number of studies do show these positive effects of the transition, as the study by Volker & Handy (2021).

The struggle with the short- and long term effects will remain during the transition. By cooperation, consultation and transparency a *golden mean* should be found on the pace of the transition. Whereas extra time will cause laxity, too strict policies could mean bankruptcy. Hence, the innovative ability of micro enterprises may be challenged, but to a certain extent.

### 5.2.2 Comparing the cases: Groningen and Zwolle

Related to the second part of the conceptual model, differences are identified in the resources and conversion factors in both cases. In the first place, Groningen has two employees working on the urban logistics theme, whereas Zwolle has only one employee working on it one day a week. The different municipal councils and hence the political color is a social conversion factor that directly affects this (interviewees Prummel and Haarsma). Actions such as providing information, setting meetings and doing additional research on the impact of the policies or done to a lesser extent, or slower. This is of impact on the actors' capabilities. The fact that Groningen is in a little advanced stage can also work positive in particular on the capabilities of actors in Zwolle. With Groningen in a frontrunning position, Zwolle can learn from the developments both positive and negative in Groningen to apply in their own path of the transition.

In Zwolle only four out of the fourteen respondents need at least a zero-emission van. In Groningen almost fifty percent, with ten out of twenty-two need a van or truck. The environmental conversion factors (charging stations and parkinglots) and resources (funding for first investment) are hence of more critical importance at current times for Groningen compared to Zwolle.

#### *5.2.2.1 The cases in a broader perspective*

The cases of Groningen and Zwolle were used in this research to study the effects of sustainable policy initiatives on micro actors' capabilities. The Green Deal Zero-Emission had the ambition to implement the new policies in 30-40 medium-sized cities in the Netherlands (Zero Emissie Stadslogistiek (2021)). The policies are nationally steered and translated to the local scales of the specific cities. The theoretical framework and the three studied policy initiatives are applicable in almost all contexts. Both questionnaires, although context-specific designed, were for 90% the same and well generalizable. Moreover, the data retrieved from the three expert interview would also apply for other medium-sized cities in the Netherlands. The stakeholder interviews resulted in partly overlapping data, but are compared to the other methods least suitable for generalization. Overall, the findings based on the two cases can be applied outside its context reasonably well. The external validity is in that sense high.

### 5.3 Recommendations for further research

In the first place, for planning theory, this research has focused on a specific niche of actors with a rather unique approach. This has given useful insights on the transition in urban logistics. Placing the actors' capabilities central and linking it to actions in the field of sustainability has resulted in valuable new data. Besides the role of resources, that are of effect in most theoretical models, the conversion factors were very applicable in the field of urban logistics. In particular social and environmental conversion that could be researched in more detail in the future. The same applies for the decision making process from capabilities towards achieved functionalities. An even more focused scope, on business level, would add to the knowledge on the different values enterprises give to single capabilities.

Practically, the zero-emission zones, and in most places the delivery windows, are starting to take shape. The development of (micro) hubs, however, is still a major issue that is of direct influence on the development of the other initiatives. The design of the exemption policies are key in that development. Further research on the design, purpose, size/range and location of logistics hubs should therefore be a central issue in research.

The scale of the developments is a second, and directly linked aspect to the field of research. For the applicability and thus the support from the actors involved is the ideal scale level a critical issue. Whether policies, from a capability perspective, should focus on the street level, neighborhood level or city level for the best practices need further analysis. The current pilot projects in the Oude Kijk in 't Jatstraat in Groningen are already a first step to contribute to this recommendation.

The third recommendation, focused on communication becomes central. The current way of communication is rather traditional and focused on a, although specified, broad audience. The representation of all actors involved is therefore disproportional. Research on new communication techniques, such as the already used webinars, related to actor involvement would contribute to the inclusiveness and support of the initiated policies.

## 5.4 Recommendations for sustainable urban logistic policies

### 5.4.1 Focus on the core business

The significant changes in the logistics sector are of effect on the micro actors' capabilities. Towards 2025, business operation and the actors' capabilities related to logistics will be seriously challenged. However, for most of these actors, logistics is not the core business. This often results in a lack of focus on this part of the business. The development of personal conversion factors, supported by the help of other actors would help these actors in the transition. Logistics brokers or city managers (binnenstadsmanager) could fulfill this task of critically reviewing the core business with the specific actor.

An important aspect in this review is the possible cooperation between the various actors. The level of sustainability within business differs per enterprise. Thereby, a distinction between environmental sustainability and economic sustainability is a critical difference. The scale level is often decisive. On the individual level, micro enterprises do have to act already very sustainable to be profitable seen their available resources and capabilities. In the wider system of logistics, the sustainability is thereby not always optimal. The example by interviewee Prummel on waste logistics showed this cogently. With a maximum of ten employees in their business, it is logic that there is no one focusing on sustainability as much as in the bigger companies. The SPES-network, initiated by the national government, is an extra tool to consult in these situations.

### 5.4.2 The complicated exemptions

Exemptions are, related to the focus on the core business, a questionable part of the policies as it is challenging to make decisions that are widely supported. For the viability of the zero-emission zones, some exemptions would be relevant and appropriate. However, for the viability of (micro) hubs, and indirectly for the delivery windows, the provision of exemptions would be less feasible. Hubs need in the first place a high user percentage to be economically interesting to invest in. A high percentage is also needed for an efficient operation in the whole logistics system. Exemptions for enterprises would lower that percentage. Interviewee Haarsma advocates for adaptive measures instead of mitigating measures. Adaptation, based on the individual actors' capabilities would indeed add to viability of the broader context. The degree to which mitigating measures can avoided we will depend on the speed of the transition the coming four years.

### 5.4.3 Recommendations for planning practice

The studied niche of the micro enterprises turned out to be a valuable one. The same applied for the scope of the inner cities. In practice, the challenge indeed arise in these places, but the challenges for the micro actors working in the city center but living outside the center might be even bigger. Painters, plasterers or repair- and installation companies face various difficulties with the implementation of the new initiatives. Further research on their position is of great added value for the feasibility of the new policies (Van Amstel's remark on the difficulties with lease contracts for freelancers need, for example, further research). Another interesting feature, already mentioned by Zijlmans, is research on the future of water transport and logistics. For both Groningen and Zwolle opportunities are available. Most important in all parts of the research is the demonstration of the clear advantages the micro businesses will have after the transition (and hence their investments). Studies similar to that of Volker & Handy (2021) are the perfect example of building trust and reliability on the positive part of future circumstances.

## 6 Reflection

### 6.1 Reflection on outcomes

Although the outcomes of the study can be considered as valuable, value could have been added during the research. The amount of detailed data from the perspective of the micro actors is moderate. One of the eight interviewees represents the actors. An earlier considered focus group interview was ultimately also not included in the methodology, as the available time became limited. The number of respondents of the questionnaire could also be higher, or more equal to be better able to compare between both cases.

The selected niche of micro actors suited the capability approach. Although, during the research it became clear that a lot of actors, especially the catering service, are depending on third (delivery) parties. As a result, they are not very concerned on the new policies. This was mainly reflected in the number of respondents to the questionnaire. Additionally, the micro actors not located in the city centers are another niche that might be affected by the policies even more. This is suitable for further research.

The decision for the second case, besides Groningen, was a challenging but ultimately a well substantiated choice. Hindsight, it has been a good choice despite the different stages in the transition. The differences did not lead to challenges and has added interesting insides on the research.

### 6.2 Reflection on own process

From a personal perspective the research was a challenging, but positive learning process. The complexity of the transport, and logistics, sector still amazes me after this research. I would describe the first months of the research in which the scope followed by the theoretical research were central, as challenging. Gathering the data, in which contact with both interviewees and respondents in the field was central suited me better. This can also be reflected in the speed and used time for both processes.

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## Appendices

### Appendix I: List of capabilities by Nussbaum

Capabilities	Explanation
Life	Being able to live to the end of a human life of normal length; not dying prematurely, or before one's life is so reduced as to be not worth living.
Bodily health	Being able to have good health, including reproductive health; to be adequately nourished; to have adequate shelter.
Bodily Integrity	Being able to move freely from place to place; to be secure against violent assault, including sexual assault and domestic violence; having opportunities for sexual satisfaction and for choice in matters of reproduction.
Senses, Imagination, and Thought	Being able to use the senses, to imagine, think, and to reason—and to do these things in a “truly human” way, a way informed and cultivated by an adequate education, including, but by no means limited to, literacy and basic mathematical and scientific training. Being able to use imagination and thought in connection with experiencing and producing works and events of one's own choice, religious, literary, musical, and so forth. Being able to use one's mind in ways protected by guarantees of freedom of expression with respect to both political and artistic speech, and freedom of religious exercise. Being able to have pleasurable experiences and to avoid non-beneficial pain.
Emotions	Being able to have attachments to things and people outside ourselves; to love those who love and care for us, to grieve at their absence; in general, to love, to grieve, to experience longing, gratitude, and justified anger. Not having one's emotional development blighted by fear and anxiety. (Supporting this capability means supporting forms of human association that can be shown to be crucial in their development.)
Practical reason	Being able to form a conception of the good and to engage in critical reflection about the planning of one's life. (This entails protection for the liberty of conscience and religious observance.)

- Affiliation
- A. Being able to live with and toward others, to recognize and show concern for other human beings, to engage in various forms of social interaction; to be able to imagine the situation of another. (Protecting this capability means protecting institutions that constitute and nourish such forms of affiliation, and also protecting the freedom of assembly and political speech.)
  - B. Having the social bases of self-respect and non-humiliation; being able to be treated as a dignified being whose worth is equal to that of others. This entails provisions of non-discrimination on the basis of race, sex, sexual orientation, ethnicity, caste, religion, national origin.

Other species                      Being able to live with concern for and in relation to animals, plants, and the world of nature

Play                                      Being able to laugh, to play, to enjoy recreational activities.

- Control            over            One's  
Environment    (Political    &  
Material)
- A. Being able to participate effectively in political choices that govern one's life; having the right of political participation and protections of free speech and association.
  - B. Being able to hold property (both land and movable goods), and having property rights on an equal basis with others; having the right to seek employment on an equal basis with others; having the freedom from unwarranted search and seizure. In work, being able to work as a human being, exercising practical reason and entering into meaningful relationships of mutual recognition with other workers

Nussbaum M. C. (2013). *Creating Capabilities: The Human Development Approach*. Harvard University Press.

## Appendix II: General contact letter

Geachte *respondent X*,

Mijn naam is Arnout de Haan en op dit moment zit ik in de laatste fase van mijn master Environmental & Infrastructure Planning aan de Rijksuniversiteit Groningen. Voor mijn afstudeerproject doe ik onderzoek naar duurzame stadslogistiek in de steden Groningen en Zwolle. Gezien uw functie als “...” benader ik u met via deze weg met de vraag of u openstaat voor het afnemen van een interview.

Binnen mijn onderzoek kijk ik naar hoe geschikt en haalbaar de nieuwe initiatieven omtrent duurzame logistiek zijn voor de kleinere ondernemers (0-10 werknemers) in de stadscentra, met een focus op retail- en horecabedrijven. Hierbij focus ik mij op een drietal initiatieven; zero-emissie zones, logistieke micro hubs en venstertijden. Een extra niche in mijn onderzoek focust zich op de uiteindelijke gedragsverandering van de ondernemer in de transitie.

Met uw achtergrond en huidige werkzaamheden denk ik dat een gesprek met u veel waardevolle informatie kan opleveren voor mijn onderzoek.

Mocht u de tijd hebben voor een (kort) gesprek, dan hoor ik graag van u. Ook zou ik u via de mail of telefoon meer informatie kunnen geven over mijn onderzoek.

U kunt mij altijd bereiken via onderstaande e-mail of telefoon.

Alvast bedankt!

Met vriendelijke groet,

Arnout de Haan

E-mail: a.h.de.haan.1@student.rug.nl

Telefoonnummer: +316 10940888

## Appendix III: Questionnaire Zwolle Urban Logistics

Mijn naam is Arnout de Haan en ik ben een masterstudent Environmental & Infrastructure Planning aan de Rijksuniversiteit Groningen. Voor mijn afstudeeronderzoek doe ik onderzoek naar de ontwikkelingen binnen duurzame stadslogistiek in de binnenstad van Zwolle.

Middels deze enquête wordt er onderzoek gedaan naar de invloed die de transitie naar duurzame stadslogistiek heeft op kleine ondernemers (0-10 werknemers) in de binnenstad van Zwolle. Het doel van dit onderzoek is om een beter beeld te krijgen in hoeverre kleine ondernemingen, naast grotere en gevestigde bedrijven, aan het ambitieuze pakket van maatregelen van de gemeente kunnen voldoen.

Indien u een kleine/lokale onderneming in de binnenstad representeert, kunt u uw bijdrage aan dit onderzoek leveren door de questionnaire in te vullen. Het invullen van deze questionnaire is geheel anoniem. Met het invullen van de questionnaire gaat u akkoord met het gebruik van de resultaten voor verder onderzoek. Daarbij zal de data zorgvuldig bewaard worden door de onderzoeker.

Het invullen zal ongeveer 8 minuten duren. Alvast bedankt voor elke bijdrage die u heeft kunnen leveren! Heeft u nog vragen? U kunt mij altijd bereiken via [a.h.de.haan.1@student.rug.nl](mailto:a.h.de.haan.1@student.rug.nl).

Vraag 1. Ik heb de introductie gelezen en ga akkoord met de genoemde voorwaarden.

- ☐ Ja  
☐ Nee
- 

Vraag 2. Binnen welke van de onderstaande categorieën ondernemers in de binnenstad valt u?

- ☐ (Lokaal) retailbedrijf  
☐ Daghoreca  
☐ Avond/nachthoreca (inclusief nachtwinkels)  
☐ Anders, namelijk:

Vraag 3. Hoeveel werknemers kent uw onderneming?

- ☐ 1-3  
☐ 4-7  
☐ 8-10  
☐ Anders, namelijk:



Vraag 4. Dit onderzoek gaat over drie veranderingen in de stadslogistiek van Zwolle.  
Kunt u voor elk van de volgende drie aangeven hoeveel u weet over deze verandering?

	Ik weet niet waar het over gaat	Ik weet een beetje waar het over gaat	Ik weet op hoofdpijnen waar het over gaat	Ik weet behoorlijk goed waar het over gaat	Ik weet precies waar het over gaat
Zero-emissie zones	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Venstertijdgebieden	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Logistieke (micro)hubs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q23

Vraag 5. Wat is uw mate van betrokkenheid bij de beleidsontwikkeling voor (duurzame) stadslogistiek door de gemeente?

	Ik ben niet betrokken	Ik ben een beetje betrokken	Ik ben redelijk betrokken	Ik ben behoorlijk betrokken	Ik ben erg betrokken
Mate van betrokkenheid bij gemeentelijke beleidsontwikkeling voor (duurzame) stadslogistiek	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

De volgende vragen/stellingen focussen zich op de invoering van een zero-emissie zone in de binnenstad van Zwolle. Een zero-emissie zone houdt in dat er in principe geen vracht- en bestelauto's die vervuilende uitlaatgassen van benzine of diesel uitstoten meer welkom zijn in de binnenstad. Dat betekent alleen nog voertuigen op elektriciteit, waterstof óf spierkracht. De gemeente wil deze zone vanaf 2025 definitief invoeren.

Bij een aantal vragen zijn begrippen onderstreept. Door met de muis over deze begrippen heen te gaan komt er een definitie te voorschijn.

	Niet	Weinig	Enigszins	Veel	Erg veel
Vraag 6. In hoeverre zal de invoering van een Zero Emissie Zone (ZEZ) effect hebben op uw dagelijkse bedrijfsvoering?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Vraag 7. Denkt u dat de subsidieregeling (5.000 €) voor de aanschaf van een zero-emissie voertuig toereikend is voor uw onderneming? (U kunt eventueel een extra toelichting geven)

☐ Ja

☐ Nee

Vraag 8. De onderstaande voertuigen maken mogelijk deel uit van de transitieregeling voor voertuigen binnen ZEZ. Vink enkel het (de) voertuig(en) aan die u in gebruik heeft.

	Voertuig in gebruik
Bestelauto met Emissieklasse IV of lager <b>of</b> Bakwagen/Trekker met Emissieklasse V of lager	<input type="checkbox"/>
Bestelauto met Emissieklasse V	<input type="checkbox"/>
Bestelauto met Emissieklasse VI	<input type="checkbox"/>
Bakwagen Euro VI met kenteken vóór 1-1-2020 <b>of</b> Trekker Euro VI met kenteken vóór 1-1-2017	<input type="checkbox"/>
Bakwagen Euro VI met kenteken vanaf 1-1-2020 <b>of</b> Trekker Euro VI met kenteken vanaf 1-1-2017	<input type="checkbox"/>
Geen van bovenstaande voertuigen	<input type="checkbox"/>
Ik heb al een zero-emissie voertuig in gebruik	<input type="checkbox"/>

Vraag 9. Zou u bereid zijn zero-emissie voertuigen te delen met andere ondernemers?

Licht uw keuze kort toe

☐ Ja

☐ Misschien

☐ Nee

---

Vraag 10. Met welk van de volgende (kleinere) voertuigen bent u instaat uw werkzaamheden voort te zetten? Meerdere antwoorden zijn mogelijk.

☐ Bakfiets

☐ Elektrische (bak)fiets

☐ Elektrische bestelbus

☐ Elektrische vrachtwagen

☐ Geen van bovenstaande

---

Vraag 11. Kunt u voor elk van de volgende gebieden aangeven hoe vaak u daar komt met uw bedrijfsvoertuig?

	Nooit	Zelden	Soms	Vaak	Erg vaak
Binnenstad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Buurt/wijken Zwolle	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dorpen rondom Zwolle	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Andere steden	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

De volgende vragen/stellingen focussen zich op de uitbreiding van het venstertijdgebied in de binnenstad van Zwolle. Een venstertijdgebied houdt in dat vracht- en bestelauto's het dergelijke gebied op bepaalde tijden niet mogen inrijden. Al sinds 2018 maakt de gemeente stapsgewijs stappen richting een volledige schone binnenstad. Het doel is dat vanaf 2025 de laden/lossen tijdperiodes alleen nog beschikbaar zijn voor zero-emissie voertuigen. De vracht- en bestelauto's mogen de stadsgebieden alleen tussen 07.00 uur en 12.00 uur (14:00 uur op dit moment) inrijden. Buiten deze tijden is een ontheffing nodig.

Bij een aantal vragen zijn begrippen onderstreept. Door met de muis over deze begrippen heen te gaan komt er een definitie te voorschijn.

	Niet	Weinig	Enigszins	Veel	Erg veel
Vraag 12. In hoeverre zullen de venstertijduitbreidingen effect hebben op uw dagelijkse bedrijfsvoering?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

Vraag 13. Maakt u op dit moment gebruik van een pollerpas of transponder om ook buiten de bevoorradingstijden het venstertijdgebied van Zwolle in te kunnen? Licht uw antwoord eventueel toe.

☐ Ja

☐ Nee

De volgende vragen/stellingen focussen zich op de ontwikkeling van logistieke micro hubs rondom de binnenstad van Zwolle. Dit zijn locaties waar een deel van de binnenstad- bevoorrading en distributie zich concentreert. Vanuit deze hubs wordt dan het laatste stukje naar het afleveradres voortgezet met cargobikes, elektrische busjes of andere zero-emissie voertuigen. Er kunnen ook bestellingen worden opgehaald bij een hub. Een dergelijke micro hub wordt niet gefaciliteerd door de gemeente, maar het initiatief wordt gelegd bij de ondernemers.

Bij een aantal vragen zijn begrippen onderstreept. Door met de muis over deze begrippen heen te gaan komt er een definitie te voorschijn.

	Ze er onwaarschijnlijk	Onwaarschijnlijk	Niet waarschijnlijk, niet onwaarschijnlijk	Waarschijnlijk	Ze er waarschijnlijk
Vraag 14. In hoeverre denkt u dat een logistieke micro hub efficiënt zou werken voor uw eigen bedrijfsvoering?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vraag 15. In hoeverre denkt u dat <u>pakketkluisen</u> goed zouden kunnen werken voor uw eigen bedrijfsvoering?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vraag 16. In hoeverre denkt u uw gewenste service nog te kunnen leveren met logistieke micro hubs? (vers=vers, voldoende voorraden)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

De volgende vragen/stellingen zijn de laatste van deze questionnaire. De eerste twee vragen/stellingen gaan over de algemene transitie naar duurzame logistiek. De laatste twee gaan over een eventueel vervolg en een afsluitende laatste opmerkingen.

	Ze er onwaarschijnlijk	Onwaarschijnlijk	Niet waarschijnlijk, niet onwaarschijnlijk	Waarschijnlijk	Ze er waarschijnlijk
Vraag 17. In hoeverre denkt u dat de <u>drie voorgestelde initiatieven</u> uw concurrentiepositie in uw branche zal aantasten?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vraag 18. In hoeverre denkt u dat de <u>drie voorgestelde initiatieven</u> overige duurzaamheidsontwikkelingen in uw bedrijf belemmeren?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

(Vraag 19.) Bent u bereid deel te nemen aan een vervolgggesprek over de ontwikkelingen in de stadslogistiek?

Tijdens dit vervolgggesprek zullen een aantal lokale ondernemers (zoals u) discussiëren over de nieuwe ontwikkelingen in duurzame stadslogistiek. Welke uitdagingen en welke kansen ziet u met dit nieuwe beleid? De gespreksonderwerpen zullen ook over de resultaten van deze enquête gaan. Indien u bereid bent om aan dit vervolgggesprek mee te werken kunt u uw gegevens (bedrijfsnaam en e-mailadres) hieronder invullen. Voor een uitnodiging zal de onderzoeker eind mei/begin juni contact met u opnemen. Alle ingevulde bedrijfsgegevens blijven bij de onderzoeker. In verband met het coronavirus dan nog een laatste vraag aan u. Gaat uw voorkeur uit naar een online of fysiek gesprek? Indien uw voorkeur uitgaat naar fysiek, is de vraag daarbij of u eventueel een locatie (bedrijfspand) beschikbaar kunt stellen voor het gesprek?

Indien u geen interesse heeft kunt u deze vraag onbeantwoord laten.

Bedrijfsnaam

E-mailadres

Vorm: Online / Fysiek

Locatie beschikbaar: Ja /  
Nee

---

Vraag 20. Heeft u nog aanvullende opmerkingen of zaken die niet in de questionnaire naar voren zijn gekomen? Vul deze dan hieronder in.

## Appendix IV: Questionnaire Groningen Urban Logistics

The questionnaire of Zwolle (appendix IV) is apart from a few alteration similar to this questionnaire distributed in Groningen. Only question number 13 differs, as Groningen does not have a 'pollergebied'. The question in the Groningen questionnaire is added here, just as the introduction text of the questionnaire.

---

Mijn naam is Arnout de Haan en ik ben een masterstudent Environmental & Infrastructure Planning aan de Rijksuniversiteit Groningen. Voor mijn afstudeeronderzoek doe ik onderzoek naar de ontwikkelingen binnen duurzame stadslogistiek in de Groningse binnenstad.

Middels deze enquête wordt er onderzoek gedaan naar de invloed die de transitie naar duurzame stadslogistiek heeft op kleine ondernemers (0-10 werknemers) in de binnenstad van Groningen. Het doel van dit onderzoek is om een beter beeld te krijgen in hoeverre kleine ondernemingen, naast grotere en gevestigde bedrijven, aan het ambitieuze pakket van maatregelen van de gemeente kunnen voldoen.

Indien u een kleine/lokale onderneming in de binnenstad representeert, kunt u uw bijdrage aan dit onderzoek leveren door de questionnaire in te vullen. Het invullen van deze questionnaire is geheel anoniem. Met het invullen van de questionnaire gaat u akkoord met het gebruik van de resultaten voor verder onderzoek. Daarbij zal de data zorgvuldig bewaard worden door de onderzoeker.

Het invullen zal ongeveer 8 minuten duren. Alvast bedankt voor elke bijdrage die u heeft kunnen leveren! Heeft u nog vragen? U kunt mij altijd bereiken via [a.h.de.haan.1@student.rug.nl](mailto:a.h.de.haan.1@student.rug.nl).

Q28

★

Vraag 13. Heeft het mogelijk verplichte laden/lossen van goederen in de ochtenduren (7-12) invloed op uw huidige personeelsbezetting? Licht uw antwoord kort toe.

☐ ★ Ja


☐ ★ Misschien

☐ Nee

## Appendix V: The Flyer


# DE BINNENSTAD 'OP SLOT'

## WAAR LIGT UW LOT?



Er zijn veel veranderingen aangekondigd omtrent de logistiek in onze binnenstad. Bent u enthousiast of juist erg kritisch over deze ontwikkelingen? Vul mijn enquête in! Scan de QR-code op de achterzijde en help mij, maar zeker ook uzelf voordat de nieuwe regels gaan gelden!

Arnout de Haan  
Masterstudent Environmental  
& Infrastructure Planning RUG



+31 610940888  
a.h.de.haan@student.rug.nl

## IN HET KORT

Als masterstudent doe ik voor mijn afstudeerproject onderzoek naar duurzame stadslogistiek in Groningen en Zwolle. Hierbij kijk ik naar de mogelijke invloeden van de aankomende zero-emissie zones, aangepaste venstertijden en logistieke (micro) hubs op de bedrijfsvoering van kleine/lokale ondernemers (0-10 werknemers) in de binnenstad. De vraag is namelijk in hoeverre de ondernemers de ambitieuze initiatieven in de transitie naar duurzame stadslogistiek kunnen volgen.

Middels een enquête van ongeveer 8 minuten onder zowel retail- als horecaondernemers tot 10 werknemers gevestigd in de binnenstad probeer ik hier antwoord op te vinden. Bent u deze ondernemer uit Groningen of Zwolle, dan kan uw bijdrage van grote waarde zijn! Niet alleen voor mijn onderzoek, maar ook voor uw eigen bedrijf aangezien de resultaten van dit onderzoek zeker van invloed kunnen zijn op de uiteindelijke beleidsuitvoeringen.

Door één van beide onderstaande QR-codes te scannen kunt u meteen beginnen met het invullen van de enquête. De enquête ingevuld? Dan wil ik u via deze weg hartelijk bedanken voor uw geleverde bijdrage!

### GRONINGEN



### ZWOLLE





## Appendix VI: Capability scheme

Initiative	Means to achieve:	Affected by: Conversion factors	Freedom to achieve: Capabilities	Achievements: Functionings	Sustainability aspects
by local authorities	commodities and services	Personal, social or environmental	Being able to	Being	Awareness, Avoidance, Act and Shift, Anticipation
Zero-emission zones	Access to zero-emission vehicle	Social, Environmental	Purchase zero-emission vehicles		Awareness, Act and shift
			Purchase new cars for transition period (till 2030)		Awareness, Act and shift, Anticipation
			Apply for compensation by public authorities		Awareness, Act and shift, Anticipation
	Access to charge	Social, Environmental	Charge EV's closeby		Awareness, Act and
	Access to subsidies	Social	Take out a loan for the purchase costs (or lease)		Awareness, Act and shift
	Access to information on zero-emission	Personal, Social	Obtain an exemption		Awareness, Act and shift
	Access to shared vehicles	Social, Environmental	Share zero-emission vehicles with others		Awareness, Act and Shift, Avoidance
Delivery windows	Access to employees (in morning hours)	Social	Open doors in morning hours		Awareness, Act and shift
Delivery hubs/CCC	Access to hub locations	Social, Environmental	To join an initiator of a (micro) hub		Awareness, Avoidance, Anticipation
			To initiate a (micro) hub		Awareness, Avoidance, Anticipation
	Efficiency	Social	Work as (economically) efficient as possible		Awareness, Avoidance, Anticipation
	Load- and unload in time	Personal, Social, Environmental	load- and unload when desired/needed		Awareness, Avoidance, Act and Shift,
Not specified to one initiative		Personal, Social	Continue business operations as usual		Awareness
		Social, Environmental	To deliver all package with the current number of vehicles		Awareness, Act and Shift
		Social	Keep all employees in the company		Awareness, Avoidance, Act and Shift,
		Environmental	Move to another location closeby		Awareness, Act and Shift
		Personal, Social	Maintain satisfaction rate of all customers and employees		Awareness
		Social	Act with sufficient knowledge on the related causalities		Awareness, Avoidance, Act and Shift, Anticipation
		Social	To survive, as 40 percent of new SMEs fail to survive (Bushe 2019)		Awareness, Avoidance, Act and Shift, Anticipation
		Social	Improve own business apart from public goals		Awareness, Anticipation
		Social	Compete as usual		Awareness, Avoidance, Act and Shift,

## Appendix VII: Code tree



## Appendix VIII: Agreement to participate (REC)

### Agreement to participate - Research Ethics Committee (REC)

in master research project:

Title: Reviewing Sustainable Urban Logistics from a capability approach perspective

Subtitle: A comparative case study in the inner cities of Groningen and Zwolle

*The purpose of the research is to study to what extent sustainability interventions by local governments enhance the capabilities of micro urban logistics actors in the inner cities of Groningen and Zwolle*

- I have read and I understand the information sheet of this present research project.
- I have had the opportunity to discuss this study. I am satisfied with the answers I have been given.
- I understand that taking part in this study is voluntary and that I have the right to withdraw from the study until the moment that the study has been published, and to decline to answer any individual questions in the study.
- I understand that my participation in this study is confidential. Without my prior consent, no material, which could identify me will be used in any reports generated from this study.
- I understand that this data may also be used in articles, book chapters, published and unpublished work and presentations.
- I understand that all information I provide will be kept confidentially either in a locked facility or as a password protected encrypted file on a password protected computer.

Please circle YES or NO to each of the following:

I consent to my interview being audio-recorded YES / NO

I wish to remain anonymous for this research YES / NO

**If YES**

My first name can be used for this research YES / NO

**OR**

A pseudonym of my own choosing can be used in this research YES / NO

**“I agree to participate in this individual interview and acknowledge receipt of a copy of this consent form and the research project information sheet.”**

Signature of participant: \_\_\_\_\_ Date: \_\_\_\_\_

**“I agree to abide by the conditions set out in the information sheet and I ensure no harm will be done to any participant during this research.”**

Signature of researcher: \_\_\_\_\_ Date: \_\_\_\_\_

Please fill in the following information. It will only be used in case you want to be sent a copy of interview notes so that you have the opportunity to make corrections.

Address:

Email:

## Appendix IX: Information sheet (REC)

### Informatiesheet – Research Ethics Committee (REC)

Thesis van: Arnout de Haan

Hartelijk bedankt dat u de tijd hebt genomen om te overwegen deel te nemen aan deze masterthesis.

#### Vertrouwelijkheid en deelnemersrechten

- De interviews worden opgenomen en tijdens het interview worden notities gemaakt.
- U hebt het recht om te vragen om de opname uit te schakelen wanneer u dit beslist en u kunt het interview op elk moment beëindigen.
- Desgewenst ontvangt u een kopie van de interviewnotities en hebt u de mogelijkheid om correcties aan te brengen of te vragen om de verwijdering van alle materialen.
- De informatie die u verstrekt, wordt vertrouwelijk bewaard in een afgesloten faciliteit of in een met een wachtwoord beveiligd bestand op mijn computer tot vijf jaar na het voltooien van mijn onderzoek.
- Het belangrijkste gebruik van de informatie die u verstrekt zal mij helpen bij mijn masterthesis.
- Tenzij u uitdrukkelijke toestemming hebt gegeven om dit te doen, worden persoonlijke namen of andere informatie die dient om u als informant te identificeren, niet opgenomen in dit onderzoek.

Als deelnemer hebt u het recht om:

- te weigeren deel te nemen;
- te weigeren om een bepaalde vraag te beantwoorden;
- te vragen om de audiorecorder op elk moment uit te schakelen;
- het interview op elk gewenst moment te beëindigen;
- zich terugtrekken uit de studie tot drie weken na deelname aan het onderzoek;
- op elk moment tijdens de deelname vragen te stellen over het onderzoek; en
- te vragen om het wissen van materialen die u niet wenst te gebruiken in rapporten van de studie

Ik bedank nogmaals dat u de tijd heeft genomen om deel te nemen aan mijn masterthesis. Ik sta tot uw beschikking voor alle vragen die u heeft. U kunt ook contact opnemen met mijn supervisor op het onderstaande adres.

Hoogachtend,  
Arnout de Haan

Contactgegevens onderzoeker:  
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## Appendix X: Output questionnaire Groningen

The output of the questionnaire is stored by the researcher

## Appendix XI: Output questionnaire Zwolle

The output of the questionnaire is stored by the researcher

## Appendix XII: Interview guides

<b>A</b>	<b>Expert interview - GJ Prummel</b>
<b>B</b>	Expert interview - WP van Amstel
<b>C</b>	Expert interview - Paul Kamps (aangepast)
<b>D</b>	Stakeholder interview
<b>E</b>	Stakeholder interview – P Tjepkema GCC

### • Expert interview - GJ Prummel

#### 1. **Introductie** (niet opgenomen)

- Focus en doel van het expert interview, inclusief duur van het interview
- *Toestemmingsformulier:*
  - *Akkoord met opname interview? / Anoniem of naamsvermelding in uitwerking*
- *Rechten benoemen: Mag altijd stoppen met het interview, data delen met derden.*
- Nog vragen voorafgaand aan het interview?

#### 2. **Algemene vragen** (opgenomen)

1. Respondent specifiek

#### 3. **Duurzaamheid en haar intenties** (opgenomen)

2. In de ZES staat duurzaamheid centraal. Hoe zou u duurzaamheid omschrijven als het gaat over stadslogistiek?  
*- Efficiëntie, uitstootvrij (mens, milieu, economie in evenwicht, of iets de overhand?)*
3. Bewustzijn en bewustwording is een belangrijk onderdeel binnen duurzaamheid. Hoe wordt dit ingevuld in de logistieke sector?
4. Vermijding of voorkoming is een ander aspect. Hoe wordt dit met name ingevuld?  
*(Focus op verkleinen aantal kilometers, of efficiëntere ladingen?)*
5. Verandering of verschuiving is een derde aspect. Dit is of gefocust op modaliteit (ZE) of op tijdstip (venstertijden). Hoe verhoudt dit zich binnen de logistiek volgens u?
6. Als vierde is er de anticipatie op technologische ontwikkelingen. Op welke manier wordt dit aspect, of deze partijen die zich hier op focussen, betrokken binnen ZES?

#### 4. **De rol van kleine (lokale) ondernemers** (opgenomen)

7. Op welke manier worden de kleine ondernemers in binnensteden (0-10 werknemers) actief betrokken binnen de transitie? *(MKB en VNO-NCOW als partijen, andere schaalniveaus nog?)*
8. Er is gekozen voor een aankondigingsperiode van 4 jaar. Zijn deze 4 jaar gebaseerd op (bijvoorbeeld) een schatting van tijd dat bedrijven nodig hebben om zich aan te passen? *(overige redenen?)*

9. Groningen is al ver in de transitie wat betreft het beleid, andere steden nog niet. Wat voor effect heeft dit op ondernemers in Groningen denkt u?
10. Steden en betrokken willen zoveel mogelijk uniformiteit. Welke maatstaaf wordt hierin gebruikt? (Internationaal (klimaatakkoord), nationaal, regionaal of lokaal normen?)
11. Op welke manier gaat GD ZES om met de (mogelijke) invloeden van de COVID-19 pandemie van dit moment? (*uitzonderingen, tijdspad*)

## 5. Afsluiting

12. Heeft u zelf nog toevoegingen aan dit interview die nog niet aanbod zijn gekomen?

### • Expert interview - WP van Amstel

1. In 2009 verscheen een van uw boeken over risicomanagement en logistiek. Hoe zou u risicomanagement vertalen voor kleine bedrijven in de huidige transitie naar duurzame stadslogistiek?
2. Het beleid omtrent duurzame stadslogistiek is redelijk uniform. In hoeverre denkt u dat dit de efficiëntie/effectiviteit van bedrijfsvoering in de erg diverse binnenstad belemmerd?
3. Steden als Leeuwarden en Hengelo zien de transitie naar zero-emissie voor kleine bedrijven nog niet echt zitten. Wat is uw mening voor een eventuele uitzonderingspositie voor deze groep ondernemers in binnensteden?
4. De transitie naar duurzame stadslogistiek is in zijn geheel nodig en goed. In de huidige tijd is het echter uitdagender als gevolg van het coronavirus. Voorziet u vooral problemen of juist ook kansen door het coronavirus voor de (kleine) ondernemers in de transitie?
5. Groningen is een koploper in de transitie, Zwolle wil graag maar loopt nog een aantal stappen achter. Ziet u koplopers (Groningen) in de transitie veel voordelen hebben, of is 'goed voorbeeld doet goed volgen' (Zwolle) een betere uitgangspositie?
6. Duurzaamheid gaat ook vaak over algehele leefbaarheid (locatie specifiek). Voorziet u geen belemmeringen in duurzaamheidsontwikkelingen elders in de bedrijfsvoering, naast logistiek?
7. Heeft u nog extra aanvullingen op de rol van de kleine ondernemer in de transitie naar duurzame stadslogistiek?

### • Expert interview - Paul Kamps (aangepast)

#### Algemene vragen

1. Respondent afhankelijk

#### Duurzaamheid en haar intenties

2. In de ZES staat duurzaamheid centraal. Hoe zou u duurzaamheid omschrijven als het gaat over stadslogistiek?  
- *Efficiëntie, uitstootvrij (mens, milieu, economie in evenwicht, of iets de overhand?)*



3. Bewustzijn en bewustwording is een belangrijk onderdeel binnen duurzaamheid. Hoe wordt dit ingevuld in de logistieke sector?
4. Vermijding of voorkoming is een ander aspect. Hoe wordt dit met name ingevuld? (*Focus op verkleinen aantal kilometers, of efficiëntere ladingen?*)
5. Verandering of verschuiving is een derde aspect. Dit is of gefocust op modaliteit (ZE) of op tijdstip (venstertijden). Hoe verhoudt dit zich binnen de logistiek volgens u?
6. Als vierde is er de anticipatie op technologische ontwikkelingen. Op welke manier wordt dit aspect, of deze partijen die zich hier op focussen, betrokken binnen ZES?

#### **De kleine binnenstadondernemers**

7. Op welke manier worden de kleine ondernemers in de binnenstad (0-10 werknemers) actief betrokken binnen de transitie naar ZE? (*MKB en VNO-NCOW als partijen, andere schaalniveaus?*) *Weet u de precieze verhouding/aandeel van deze groep ondernemers in Zwolle?*
8. Er zijn transitieregelingen ingesteld tussen 2025-2030 m.b.t. emissielevels. Zijn deze puur gebaseerd op emissielevels of is er ook gekeken naar welke voertuigen nu gebruikt worden?
9. WP van Amstel is kritisch op het effect en voorziet problemen. Waarom zouden we het niet meer organisch houden, of bijvoorbeeld met beleid als “voordelen als het ZE is”?

*(Andere stappen binnen de regelgeving zoals het Oslo voorbeeld waar geen verplichtingen zijn, maar wel voordelen als? Zwolle avond venstertijd voor ZE)*

10. In een dichtbevolkte en bebouwde binnenstad kan een ZE amper functioneren zonder (micro) hubs. Hoe gaat het met de ontwikkeling van deze hubs?  
*Initiatief bij ondernemers, ook een risico, loopt het al met investeerders?*
11. En de venstertijden van 2022. Is hierin duidelijk een volgorde afgesproken, want ook bij venstertijden zouden in ieder geval micro-hubs wel nodig zijn?

#### **Ondersteuning / ontheffing voor de ondernemer**

12. Het MKB is niet de meest innovatieve sector (2/3). Kan een gemeente/regio hierin ondersteunen om zo de transitie draagbaarder te maken of te versnellen?
13. Het beleid voor ontheffingen is nog niet rond. Zou dit veel kans bieden voor de kleine ondernemer m.b.t. bijvoorbeeld drempelverlaging in de transitie?
14. Ondanks dat de ondernemer positief is in de meeste gevallen is met name de onduidelijkheid over mogelijke ontheffing een doorn in het oog. Hoe wordt hier mee om gegaan?
15. Zijn er naast de transitieperiode voor de ZE-overstap nog andere aanpassingen of hulpbronnen die worden geboden gezien (negatieve) invloeden van de COVID-19 pandemie van dit moment? (*Of ziet u de pandemie juist als een positieve kans?*)
16. Ondernemers zijn over het algemeen positief gesteld tegen verandering maar zeggen ook “niet alleen wij, ook zij”. Zij is dan vooral personenvervoer. Tot in hoeverre is de regio/gemeente hier ook mee bezig?

#### **Afsluiting**

17. Zijn er nog vragen of opmerkingen vanaf uw kant die we nog niet besproken hebben?

#### **• Stakeholder interview**

Focus: Centraal in dit interview staat de rol van de kleine ondernemer (0-10 werknemers) in binnenstedelijke gebieden. Wat voor effecten heeft de transitie naar duurzame stadslogistiek voor deze groep ondernemers. Wat zijn de kansen, uitdagingen en/of belemmeringen voor de ‘capabilities’ die de ondernemers hebben of hadden?

- Datum:
- Duur:
- Informatiesheet en participatie document: *Akkoord met opname interview? / Anoniem of naamsvermelding in uitwerking? / Ten aller tijden recht tot beëindigen van het interview*
- Nog vragen voorafgaand aan het interview?

## **Algemeen**

1. Respondent afhankelijk

## **Duurzaamheid en haar intenties**

2. In de ZES staat duurzaamheid centraal. Hoe zou u duurzaamheid omschrijven als het gaat over stadslogistiek?  
*- Efficiëntie, uitstootvrij (mens, milieu, economie in evenwicht, of iets de overhand?)*
3. Vermijding of voorkoming is een ander aspect. Hoe wordt dit met name ingevuld? *(Focus op verkleinen aantal kilometers, of efficiëntere ladingen?)*
4. Als vierde is er de anticipatie op technologische ontwikkelingen. Op welke manier wordt dit aspect, of deze partijen die zich hier op focussen, betrokken binnen ZES?

## **Beleid en de drie initiatieven**

5. Op welke manier worden de kleine ondernemers in de binnenstad (0-10 werknemers) actief betrokken binnen de transitie naar ZE? *(MKB en VNO-NCOW als partijen, andere schaalniveaus?) Weet u de precieze verhouding/aandeel van deze groep ondernemers in Zwolle?*
  6. Voor een 'place to be', is niet alleen milieu van belang maar ook de verscheidenheid en drukte van een levendige stad, bent u niet bang voor het verlies van fysieke winkels in de binnenstad?
  7. Er zijn transitieregelingen ingesteld tussen 2025-2030 m.b.t. emissielevels. Zijn deze puur gebaseerd op emissielevels of wordt er ook gekeken naar welke voertuigen nu gebruikt worden?
  8. WP van Amstel is kritisch op het effect en voorziet problemen. Waarom zouden we het niet meer organisch houden, of bijvoorbeeld met beleid als "voordelen als het ZE is"?
- (Andere stappen binnen de regelgeving zoals het Oslo voorbeeld waar geen verplichtingen zijn, maar wel voordelen als? Zwolle avond-venstertijd voor ZE nu al?)*
9. In een dichtbevolkte en bebouwde binnenstad kan een ZE amper functioneren zonder (micro) hubs. Hoe gaat het met de ontwikkeling van deze hubs?  
*Initiatief bij ondernemers, wordt er actief gezocht naar investeerders?*
  10. In Groningen worden de venstertijden aangepast. Wat zijn de plannen met venstertijden voor Zwolle, want ook bij venstertijden zouden micro-hubs nodig zijn? Zit er ook een bepaalde volgorde in de implementatie van de verschillende beleidsinitiatieven?

## **Ondersteuning / ontheffing voor de ondernemer**

11. Het MKB is niet de meest innovatieve sector (2/3). Kan een gemeente/regio hierin ondersteunen om zo de transitie draagbaarder te maken of te versnellen?  
*Zo ja, hoe zou Zwolle dit kunnen doen?*
12. Het beleid voor ontheffingen is nog niet rond. Zou dit veel kans bieden voor de kleine ondernemer m.b.t. bijvoorbeeld drempelverlaging in de transitie?
13. Ondanks dat de ondernemer positief is in de meeste gevallen is met name de onduidelijkheid over mogelijke ontheffing een doorn in het oog. Hoe wordt hier mee om gegaan?

14. Zijn er naast de transitieperiode voor de ZE-overstap nog andere aanpassingen of hulpbronnen die worden geboden gezien (negatieve) invloeden van de corona pandemie van dit moment? *(Of ziet u de pandemie juist als een positieve kans? Initiatieven buiten corona om?)*
15. Ondernemers zijn over het algemeen positief gesteld tegen verandering maar zeggen ook “niet alleen wij, ook zij”. Zij is dan vooral personenvervoer. Tot in hoeverre is de regio/gemeente hier ook mee bezig? *Uitbreiding van het huidige ‘voetgangersgebied’?*
16. Kunt u mij nog verder helpen in het vinden van een platform/afzetmarkt voor mijn questionnaire?

#### **Afsluiting**

17. Zijn er nog vragen of opmerkingen vanaf uw kant die we nog niet besproken hebben?

#### **• Stakeholder interview – P Tjepkema, GCC**

Focus: Centraal in dit interview staat de rol van de kleine ondernemer (0-10 werknemers) in de binnenstad van Groningen. Wat voor effecten heeft de transitie naar duurzame stadslogistiek voor deze groep ondernemers. Wat zijn de kansen, uitdagingen en/of belemmeringen voor de ‘capabilities’ die de ondernemers hebben of hadden?

- Datum: 02/06/2021
- Duur: 45 minuten
- Informatiesheet en participatie document: *Akkoord met opname interview? / Anoniem of naamsvermelding in uitwerking? / Ten aller tijden recht tot beëindigen van het interview*
- Nog vragen voorafgaand aan het interview?

#### **Algemeen**

1. U heeft met Laif en Nuver een eigen lifestyle, woondecoratie en meubelzaak. Kunt u eens wat meer vertellen over uw eigen zaak, over het ontstaan en hoe het nu gaat?

#### **Beleidsonderdelen**

2. De ZE-zone (en uitgebreide venstertijden) is onderdeel van een ‘groter plaatje’ over onder andere leefbaarheid in de stad, wat vindt u van deze benadering van ‘duurzaamheid’?
3. Wat is uw mening over de mate waarin de gemeente de lokale binnenstadsondernemer (0-10) betreft in de transitie naar duurzame logistiek?
  - De klankbordgroep (met o.a. GCC en MKB) geeft een goede representativiteit van de ondernemers?
  - Maakt de lokale ondernemer hier vanuit haar positie ook voldoende gebruik van vindt u?
  - En laat de gemeente ook voldoende zien dat de aan-/opmerkingen gehoord worden?
4. Het ontheffingenbeleid is nog niet rond, ziet u hierin vooral onduidelijkheid door ontstaan, of juist kansen voor de ondernemers?
5. Het beleid leunt deels op de technologische ontwikkelingen en marktwerken richting 2025. Volgt u deze gedachtegang of heeft u vraagtekens?
6. Er is een vooraankondigingsperiode van minimaal 4 jaar gekozen. Denkt u dat dit de ondernemers voldoende tijd biedt?
7. Naast de 4 jaar is er ook een transitieperiode ingesteld tot aan 2030, weet u of dit voor veel ondernemers in Groningen geldt? Of zijn er cijfers bekend over het aantal te vervangen auto’s?

#### **Beschikbare middelen voor ondernemers**

8. Op dit moment zie je dat veel ondernemers welwillend zijn, maar dat er platforms ontbreken die ze ondersteuning biedt. Geldt dit ook voor u? Waarom?
9. In de transitie moeten een aantal randvoorwaarden beschikbaar zijn. Welke zijn in uw ogen het meest belangrijk voor de lokale ondernemer?
10. Wat is uw mening over de beschikbare subsidie van 5.000 euro? Een positieve steun, ontoereikend, of slechts een goed gebaar?

#### **Ontwikkelingen en uitdagingen**

11. Recent is besloten dat ook bromfietsen en scooters in grote delen van de binnenstad verboden worden, denkt u dat dit helpt binnen de specifieke transitie in logistiek?
12. Microhubs zijn een veel gehoorde oplossing voor de mogelijke problemen die ontstaan door de uitgebreide venstertijden en ZE-zone. Ziet u potentie in dergelijke hubs rondom het centrum?  
- Op welke manier kan de lokale ondernemer hier het best van profiteren?
13. Veel ondernemers zien problemen ontstaan bij spoedleveringen, nalevering en leveringen voor avondwinkels. Wat is uw mening hierover?
14. Een groot deel van de ondernemers in de binnenstad is afhankelijk van vervoerders/leveranciers. Vaak hebben ze langdurige contracten. Hoe ziet u deze relatie in de komende jaren voor u?
15. Groningen positioneert zich als een koploper (in ieder geval in de regio). Is dit in uw ogen een voordeel, of is het concept van 'goed voorbeeld, doet goed volgen' een betere uitgangspositie?

#### **Tot slot**

16. De huidige periode wordt natuurlijk beïnvloed door het coronavirus. Is dit in uw ogen van grote invloed (negatief?) of ziet u ook veel kansen als gevolg van het virus?
17. De gemeente is ambitieus, positief en zegt dat er veel mogelijk is. Bent u ook zo positief over de (nabije) toekomst?  
- Ook gezien de mogelijke extra maatregelen die komen onder de kapstok van 'leefbare stad'?

#### **Afsluiting**

18. Zijn er nog vragen of opmerkingen vanaf uw kant die we nog niet besproken hebben?

Appendix XIII: Interview Prummel

Appendix XIV: Interview Van Amstel

Appendix XV: Interview Kamps

Appendix XVI: Interview Van der Vlugt

Appendix XVII: Interview Haarsma

Appendix XVIII: Interview Tillemans

Appendix XXIV: Interview Tjepkema

Appendix XX: Interview Zijlmans

The transcripts of the interviews are stored by the researcher

## Appendix XXI: Overview participative participation

- Questionnaire distribution Groningen
  - Ik ben veelal afhankelijk van derde partijen als Hanos die het hier gewoon komen afleveren.
  - Onze vracht wordt gewoon gebracht, soms met een pompkar. Als ik iets moet versturen loop ik even snel naar het postkantoor hier om de hoek.
  - Ik heb nog een speciaal magazijn aan de Peizerweg, daar rij ik af en toe met mijn personen auto naar toe voor nieuwe spullen.
  - Ik heb veel handel, bloemen vooral, die uit Duitsland komen. Die leveren ook vaak 's nachts, dat is zo afgesproken. De regelgeving voor internationale bedrijven is misschien wel lastig, voor de gemeente en voor die bedrijven.
  - Retourneren van verkeerde producten of emballage is wel lastig in de toekomst. Mijn vervoerder komt hier soms maar een keer in de maand vanuit midden Nederland, dan wordt dat een heel gedoe als het zero-emissie en venstertijden krijgt.
- Questionnaire distribution Zwolle
  - We hebben nog een tweede zaak buiten de stad. Daar is de opslag, en dan rijden we hier 's ochtends met de verse waren naartoe.
  - De wachttijden voor elektrische auto's is op dit moment erg lang. We hopen eind dit jaar ons voertuig binnen te hebben.
  - We hebben nu één voertuig vervangen voor een elektrische. De anderen komen wellicht later. Hopen dat de prijzen dan gunstiger zijn.
- Webinar SPES on sustainable urban logistics in Overijssel
  - Omdat sommige ondernemers nu al elektrisch rijden, komen er straks ook tweedehands voertuigen. Die kunnen als instap voertuig gebruikt worden misschien.
  - De eerste stappen moeten gewoon zichtbaar worden. Ook al is het met een bakfiets die maar kleine stukjes kan. Dat helpt in de transitie naar het uiteindelijke doel.
  - In Hengelo is het doel om zo snel mogelijk de gebieden uit te breiden. Dat is nog even afwachten maar die stad moet gewoon een verblijfplaats worden. Scooters en bussen moeten niet meer vlak langs je tafeltje kunnen rijden.

## Appendix XXII: SPES Factsheet



**SPES**  
**SAMENWERKINGSPROJECT**  
**EXPERTPOOL STADSLOGISTIEK**

Het ontwerp-Klimaatakkoord bevat de doelstelling om 1 Megaton CO<sub>2</sub> per jaar te besparen in de stadslogistiek vanaf 2025. Om dit doel te behalen moeten de 30-40 grootste gemeenten in 2025 een zero emissie zone voor stadslogistiek hebben ingevoerd. Om gemeenten te ondersteunen bij het behalen van deze doelstelling heeft het ministerie van Infrastructuur en Waterstaat vanuit de Green Deal Zero Emission Stadslogistiek (GDZES), SPES opgericht.

### SPES: Samenwerkingsproject Expertpool Stadslogistiek

SPES ondersteunt met kennis, werkwijzen en ervaringen de 30-40 grootste gemeenten bij het voorbereiden en nemen van de besluiten voor de zero emissie zones voor stadslogistiek. Het doel is dat 30-40 gemeenten uiterlijk in 2020 het besluit hebben genomen om deze zones in te gaan voeren. De expertpool waaruit gemeenten kunnen putten bestaat uit deskundigen op het gebied van goederenvervoer, logistiek, juridische aspecten etc. Gemeenten kunnen een beroep doen op de expertpool om extra meters te maken en hun projecten te versnellen.

**Definitie zero emissie:**  
In zero emissie zones heeft bedrijfsmatig vervoer geen uitstoot van CO<sub>2</sub> en luchtverontreinigende stoffen.



### Meer informatie:

Wilt u meer informatie over wat de expertpool voor uw gemeente kan betekenen? Neem dan contact op met [stadslogistiek@ce.nl](mailto:stadslogistiek@ce.nl). Kijk op [www.greendealzes.nl/gemeenten](http://www.greendealzes.nl/gemeenten) voor meer informatie en details over het indienen van een voorstel.



**Ontwerp-Klimaatakkoord:**  
"Als 30-40 gemeenten in 2025 een emissievrije zone voor stadslogistiek hebben ingevoerd, levert dat een jaarlijkse besparing van 1 Megaton CO<sub>2</sub> op."

