

INFLUENCES ON URBAN FREIGHT TRANSPORT POLICY CHOICE BY LOCAL AUTHORITIES

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Abstract

Individual freight transport policies have been investigated in the literature extensively in the last 10-15 years, yet there has surprisingly been very little attention to the process of selecting urban freight transport (UFT) policy measures. This study focuses on UFT policy choice by local authorities, investigating how policy context, resource availability and the need for legitimacy influence how local authorities seek and select UFT specific policies. The methodology is a cross-case analysis of eleven cities across three countries (Sweden, England and Scotland), based on interview and documentary data.

Findings reveal that all cities have the same high-level goals, such as reducing emissions and congestion, supporting the economy and improving quality of life. However, in most cases these rather general goals are not broken down into clear objectives with targets that can be measured. Therefore, selected UFT policy measures are chosen from a pool of common measures (primarily access restrictions such as time windows and weight restrictions), but without monitored targets that determine whether or not they are achieving objectives. This does not necessarily mean that the measures chosen are inappropriate, but that there is a lack of a strategic approach to setting and reviewing measures according to achieving specific policy goals. This is primarily a result of a lack of resources and dedicated UFT personnel, as well as challenges related to public acceptability of restrictive policies.

Key words: urban freight transport; UFT; policy; city logistics; planning; governance

1. Introduction

UFT brings both benefits and challenges to cities, thus local authorities need to balance their priorities of supporting the economy and providing quality of life for residents. As cities accommodate increased populations, they become more dependent on efficient transport networks (Dablanc, 2007). Businesses located in cities must be able to send and receive their shipments on time, and local authorities want to attract other businesses to locate in their cities, recognising that UFT is essential to their economic prosperity (Anderson et al., 2005; Ballantyne et al., 2013; Kiba-Janiak, 2017). However, UFT is heavily based on road transport and, even though freight vehicles do not comprise the majority of road traffic in cities, they produce a significant amount of air pollution (Anderson et al., 2005; Lindholm and Blinge, 2014; Kin et al., 2017). Freight vehicles also contribute to other problems such as congestion, road casualties, visual intrusion and noise pollution (Anderson et al., 2005; Quak, 2008; Kin et al., 2017). Traffic levels in cities grow in parallel to the growth in population and populations experience changes in their travelling behaviours as well as their consumption behaviours, which affect traffic conditions. For example, internet shopping has resulted in more freight vehicles with lower fill rates as well as an increase in total distance travelled by freight vehicles (Verlinde, 2015; Kin et al., 2017).

Despite increasing awareness of freight transport issues, the majority of local authorities in Europe do not possess the necessary competence and knowledge to manage UFT (Lindholm and Blinge, 2014; Fossheim and Andersen, 2017). Local authorities should aim to design inclusive strategies that involve all elements of traffic, including UFT, but historically they have paid more attention to passenger transport (Ogden, 1984; Marsden et al., 2011; Cherrett et al., 2012; Ballantyne et al., 2013; Lindholm and Blinge, 2014). Some of the reasons for this include lack of data and limited communication and cooperation among public and private stakeholders (Lindholm, 2013). In addition, local authorities experience various financial, political, cultural and technological barriers (Mincken et al., 2003). However, there is some evidence that in recent years this is starting to change as they pay more attention to identifying the benefits as well as the challenges of UFT (Ballantyne et al., 2013), although they often lack sufficient resources to increase their understanding of the dynamics of freight transport, including the requirements and viewpoints of all stakeholders (Stathopoulos et al., 2012).

Individual freight policies have been investigated in the literature extensively in the last 10-15 years, yet there has surprisingly been very little attention to the process of selecting UFT policy measures. The key issues in this process have been shown to be a lack of UFT expertise in local authorities, a lack of resources, UFT not being integrated with other aspects of urban planning, conflicts with non-freight transport policies and a limited collaboration with other UFT stakeholders (Lindholm and Behrends, 2012; Ballantyne et al., 2013; Lindholm and Blinge, 2014). This study focuses on UFT from the perspective of public authorities, investigating the process of how local authorities identify and select UFT specific policies to achieve their transport goals and how this process is influenced by the UFT policy environment.

The approach to this study is based on the theory of Howlett and Cashore (2009), which argued that policies are not just measures implemented “on the ground” but form a chain from high level goals down to practical measures. Goals refer to general ideas and aims, which policy makers intend to address, by then producing specific objectives ideally with targets, and then selecting policy measures. These are the mechanisms actually applied, which in the field of UFT can be in different forms such as enforcement (e.g. time window restrictions) or voluntary initiatives (e.g. certification schemes). Previous research (Marsden et al., 2014; Monios, 2016) has suggested that the link between goals (more abstract, higher level elements) and adopted measures (least abstract, practical mechanisms) is frequently not strong enough when policymakers construct policy goals and select measures. Marsden and Reardon (2017) showed that almost the entirety of academic papers on transport policy focus on the implemented measures rather than the link between measures and goals. This is indeed the case with UFT policy, with only few papers addressing this topic. Thus, in this study local authority planners were asked about how they select UFT policy measures, and how this process is influenced by the features of the UFT policy environment. The methodology applied is a cross-case analysis of eleven cities from Scotland, England and Sweden.

The paper is structured as follows. Section 2 introduces the theoretical literature on policy formulation, before reviewing both UFT policy measures and known influences on the UFT policy process. Section 3 presents the multiple case study methodology based on semi-structured interviews and document analysis, including sample selection, case study protocol and the steps of data collection and analysis. Section 4 summarizes the data collected in terms

of governance structure, policy documents and the identified policy goals and measures in each city. The case data in Section 4 establishes the differences between the cities in terms of their actual policy choices, while Section 5 presents the findings of the cross-case analysis according to the analytical framework, based on the results of the interviews exploring how and why these choices came about. Finally, the paper concludes by summarizing the findings and identifying the contribution of this study.

2. Literature review

This section reviews the relevant literature, beginning with a selection of publications on policy formulation, the key findings from which will form the first level of the analytical framework for the research. This framework is based primarily on the theoretical issues identified by Marsden and Reardon (2017), namely policy context, resource availability and legitimacy. Section 2.2 provides a brief overview of the main types of UFT policy measure, which will aid in categorising and analysing the types of policy measures identified in the case cities. Section 2.3 reviews recent literature analysing influences on the UFT policy process, which will provide the second level of the analytical framework, identifying the key practical challenges (e.g. UFT personnel, collaboration with industry, conflicts with other policies) which represent sub-categories underneath the higher level theoretical influences.

2.1 Policy formulation

Studies in the area of policy making apply a variety of models of the policy design process (e.g. Sidney, 2006; Howlett, 2014; Marsden and Reardon, 2017), which, although different, usually follow a similar pattern. First, policy makers try to understand why the problems they aim to mitigate occur and how they emerge (Marsden and Reardon, 2017). Subsequently, policy makers identify potential policy measures to address these problems, evaluating the costs and benefits of each option. Finally, they make a choice (Sidney, 2006). This stage is crucial because different stakeholder priorities (e.g. policy makers, businesses, citizens) may lead to conflicts and challenges that may ultimately lead to the failure of certain policy measures (Marsden and Reardon, 2017). Ideally the last stage of the cycle is to evaluate if the policy measure has been successful and, depending on performance evaluations, policy makers can decide to modify or terminate the chosen measures.

Improving the policy design process requires not only detailed knowledge of policy measures but also the context in which the process takes place (Howlett, 2018). Part of this process is establishing the link between high level policy goals, medium level policy objectives, and lowest level “on the ground” policy measures (Howlett and Cashore, 2009). In terms of transport policy, Marsden and Reardon (2017) concurred with Howlett and Cashore (2009) that there should be an interaction between policy goals and chosen policy measures; namely, policy makers need to make sure that chosen policy measures enable policy makers and institutions to achieve their goals and objectives. Part of this process is for policy makers to make their choices of policy measures by understanding their capabilities and limitations (Howlett, 2018). According to Marsden and Reardon (2017), current studies of transport policy do not investigate issues of policy context (including governance dynamics and power issues), resource availability and legitimacy. These three elements will form the basis of the analytical framework used in the present research, therefore each will now be considered in turn.

The policy context as described by Marsden and Reardon (2017) includes the policy environment, the way in which stakeholders frame issues and power levels between stakeholders. These issues have been analysed through theoretical approaches by various authors, some of the most well-known being Kingdon’s (1995) “multiple streams” framework investigating the influences that lead an item to the top of the political agenda, and the policy frames theory of Schön and Rein (1995) regarding how stakeholders use values and theories to frame a concept. The discussion on the role of power in policy processes is centred on formal and informal networks and governance dynamics, drawing on the large literature on institutional issues in policy, covering topics such as the interaction between formal and informal institutions (Rye et al., 2018) and how certain normative, coercive and mimetic influences affect a convergence in policy design processes (Akgün and Monios, 2018). Marsden and Reardon (2017) point out that the existence of such influences casts doubt on the “technical-rational model” of much transport policy that implies that policies are selected purely on rational analysis of their efficacy.

Financial and human resources significantly drive the choice of policy measures by public authorities, which can have a major impact on priority among policy aims (Howlett, 2014). This is particularly relevant for lower priority policy areas such as UFT (Akgün and Monios,

2018). Public authorities enact certain regulations, either through their own choice or from higher level government requirement, yet without sufficient resources they cannot always implement, where necessary enforce, or monitor them effectively (Lindholm and Behrends, 2012; Lindholm, 2013). Resources dedicated to UFT also vary between public and private actors. Howlett (2014) points out that different actors have different interests, resources and governing norms which all influence the selection of policies. Rose et al. (2016) explored how institutional pressures act on private freight providers, who must also juggle resources and legitimacy in the urban environment.

Legitimacy is important both for individual policies and for the public authority itself. Political actors play the key roles in determining the policy goals and implementing policy measures in order to fulfil their objectives, but in some cases their policy choice is not derived directly from the policy goals but from a desire to gain legitimacy. One example is through transferring policies from other places, such as the rise of certification and accreditation schemes (Akgün and Monios, 2018). Public acceptability is highly influential when it comes to policy choice (Howlett, 2005). For instance, a scheme like a congestion charge can gain public support in Stockholm (Eliasson and Jonsson, 2011) while being rejected by the public vote in Edinburgh (Rye et al., 2008). Eliasson and Jonsson (2011) argued that acceptability increases with familiarity. In contrast to Edinburgh's experience with the congestion charge, Stockholm introduced the charging scheme first and then held the vote later. In this way, citizens were able to see the benefits of the scheme before making a decision. Christiansen (2018) found that citizens dissatisfied with the quality of transport services are also dissatisfied with the performance of local democracy. Therefore the manner in which public acceptability is obtained is extremely important, raising the importance of collaboration which will recur throughout the discussions in this paper.

2.2 Urban freight transport policy measures

The identification of UFT policy goals by local authorities is heavily influenced by other public authorities such as national governments and the European Union (EU). Reducing emission levels, reducing congestion, increasing road safety, enabling accessibility and providing mobility are the most common goals (Fossheim and Andersen, 2017). Local authorities choose a variety of policy measures to achieve these goals, which can be categorised in various ways. Stathopoulos et al. (2012) categorized policy measures in six

categories: (1) market-based measures, (2) regulatory measures, (3) land use planning, (4) infrastructural measures, (5) new technologies, and (6) management measures. Kiba-Janiak (2017) classified the types of policies in five categories: (1) access conditions, (2) ecological freight transport practices, which refers to the implementation of policies based on collaborative actions (e.g. freight quality partnerships, logistics forums), (3) infrastructure, (4) land use management, (5) innovation & ideas, which refers to the introduction of clean and technological vehicles in executing UFT and The latter structure will be used to structure the analysis of policy measures in this paper.

Access conditions include charging and pricing schemes to decrease the level of congestion in cities, which can be varied for different times of day (Holguin-Veras et al., 2006). They may also encourage road users to use more sustainable modes of transport. However, it is a politically controversial topic as citizens strongly oppose these types of schemes (Shoemaker et al., 2010; Marsden and Groer, 2016). Access restrictions are the most common regulatory measure, based on vehicle tonnage and size (Ogden, 1992; Visser et al., 1999; OECD, 2003; Quak, 2008), as well as times and routes where certain vehicles are prohibited (Dablanc, 2008; Munuzuri et al., 2005). However, according to OECD's (2003) report, access restrictions are not communicated adequately with other stakeholders such as retailers and freight operators and can even lead to increases in distribution costs and emission levels due to increasing number of round trips, total driving time and vehicle kilometres (Quak and Koster, 2007). Another type of access restriction is Low Emission Zones (LEZ) which restrict vehicles depending on whether vehicles meet a minimum standard for vehicle emission (Ellison et al., 2013), and which can accelerate the speed of freight operators in renewing their fleet and motivate manufacturers to consider making investments in vehicles' technology (Browne et al., 2005; Quak, 2015). Specifically ecological measures include air quality management areas, which are often enforced through legislation. Other types include vehicle recognition schemes (VRS), which are not usually a part of existing classification of policy measures, as they are voluntary initiatives. VRSs encourage and train freight operators to monitor and improve their environmental performance, operational efficiency (e.g. fuel saving) and road safety. Recognition programmes can be initiated by local authorities and regional transport partnerships through freight partnerships (Dablanc et al., 2013), through which they foster cooperation between public and private stakeholders. Infrastructure measures include consolidation centre schemes which are becoming more common in recent

times, usually subsidised by the public sector to overcome private sector reluctance (Browne et al., 2005; Allen et al., 2012). Munuzuri et al. (2005) categorized land use policies in two groups as parking and building regulations. Designated loading and unloading bays are the most typical example for parking related policies (Munuzuri et al., 2005; Alho and Silva, 2014). Innovation and ideas are less common and involve high levels of collaboration with private operators to develop delivery service plans and freight route maps.

2.3 Influences on the urban freight transport policy process

Previous studies indicate that local authorities have recently started to shift their attention towards urban freight as a part of local transport planning (Browne et al., 2007; Lindholm and Behrends, 2012; Lindholm and Blinge, 2014; Kiba-Janiak, 2017; Fossheim and Andersen, 2017). There are now more venues to bring local authorities and other relevant stakeholders together such as research projects and freight partnerships. However, despite the increasing awareness and collaboration efforts, cities still encounter problems when dealing with UFT. For the most part, local authorities consider freight transport as an issue that private companies such as freight operators or receivers should take care of (Lindholm and Blinge, 2014). UFT is very much driven by commercial motivations between shippers, freight operators and receivers. However, UFT affects both the environment and the economy of cities, thus local authorities want to support existing businesses and to attract new businesses while at the same time protecting the environment and quality of life for citizens (OECD, 2003). From the public sector perspective, local authorities struggle to implement their own regulations if they cannot get support from national governments or if they cannot find the required financial as well as human resources (May et al., 2008; Lindholm, 2013). Many initiatives and projects end shortly after their funding ends, particularly many urban consolidation centre (UCC) projects (Allen et al., 2012; Allen et al., 2014; Paddeu, 2017). Lack of support from governments and lack of resources means that local authorities often are unable to identify policies that will help them balance economic, environmental and social interest of various stakeholders (Lindholm and Behrends, 2012).

As noted above, despite much research on UFT policy measures, only limited research has been published regarding the process of identifying and selecting these policy measures. However, there have been a handful of authors addressing the role of local authorities in managing UFT and interacting with other UFT stakeholders. Lindholm and Behrends (2012)

studied the state of UFT planning practices in 12 cities from different countries in the Baltic Sea Region. The identified shortcomings were a lack of knowledge concerning the ways to include UFT in overall transport planning, a lack of role models and inadequate monitoring. The authors suggested that local authorities need to work on developing a collaborative relationship with other stakeholders and understanding the complex nature of logistics. They also highlighted that land-use planning and transport planning should be better integrated, especially in new development areas. Ballantyne et al. (2013) surveyed freight stakeholders in five European countries and identified several issues, such as lack of UFT expertise in local authorities, UFT not being integrated in other aspects of urban planning and conflicts with non-freight transport policies. Lindholm and Blinge (2014) surveyed knowledge and awareness of sustainable UFT among policy planners in Sweden, finding that, as also found by Ballantyne et al. (2013), the majority of municipalities are lacking UFT data, which prevents them gaining sufficient understanding to choose and implement successful policies to accomplish transport goals. Trust, curiosity of policy makers, and knowledge exchange between different parties are also considered key factors for learning and gaining understanding about policy measures (Marsden et al., 2011). Lindholm and Blinge (2014) also identified that restrictions (e.g. weight and time) are the most popular policies implemented at the local level but no significant evidence was identified concerning the motivations that lead local authorities to choose these policies. In addition, they found that very few of the local authorities surveyed monitor the performance of the implemented measures. The overall conclusion was the need to address issues such as lack of coordination, sufficient resources and knowledge transfer. The key issues found in these papers have been used to structure the data collection and analysis, in order to understand how local authorities work with and attempt to resolve these issues when setting UFT policies.

3. Methodology

The approach adapted in this study is exploratory in nature. Exploratory case studies aim to uncover niches which remain unexplored or have been covered only in a limited scale (Yin, 2011). A multiple case study design enables authors to apply replication logic through cross-case analysis, which is essential for increasing the generalization of the findings (Yin, 2009; Meredith, 1998; Miles and Huberman, 1994). The case selection for this study was based on the perspective of transport maturity introduced by Kiba-Janiak (2017), according to which cities can be located on different positions on a scale concerning how mature they are in

terms of implementing freight-focused policies in their cities. Using this approach enables researchers to benchmark mature cities as a reference model for other cities to aim towards. There is a large literature on policy transfer; however, rather than transferring policies from other cities, the focus in this paper is understanding the successful policy design process. A particular policy may be more or less successful in different locations, but a robust policy choice process is more likely to be transferable. Hence the cross-case comparison in this paper can help identify strengths and weaknesses in this process.

For this research, the three countries were chosen according to this scale, based on secondary data from academic literature and project reports, with Sweden considered more mature in terms of UFT policy, England medium and Scotland lower. For Scotland and Sweden, the four biggest cities (in terms of population) were chosen, however one of the cities from Sweden chose not to participate in the study. In the case of England, London was excluded from the list because of its unique nature and large size and the next four biggest cities were selected. All case cities are major hubs with regards both to population and also economic wealth. The final list of cities was: Sweden (Stockholm, Gothenburg, Malmö), England (Greater Manchester, Bristol, Birmingham, Newcastle) and Scotland (Edinburgh, Glasgow, Dundee, Aberdeen). While the focus on larger cities may be considered a limitation, these tend to be the cities experiencing the negative aspects of increased UFT, particularly air pollution.

The case study design requires a structured protocol for all cases (Yin, 2009), including documentary data collection and an interview guide. Secondary data analysis was used to obtain evidence about the transport governance situation in each country and city and identify their stated policy goals and other relevant information regarding their urban freight practices. In total, 15 interviews were completed with 16 respondents. The 15 interviews encompassed the local authority in each of the 11 cities, and in cases where the local authorities share responsibility for UFT with regional transport organisations, on the recommendation of the local authorities these regional organisations were also interviewed (regional transport partnerships in Glasgow, Aberdeen, Edinburgh, and a freight quality partnership in Newcastle).

The interview guide consisted of three sections: general, policies and policy processes, and was sent to the interviewees in advance. The questions falling under the general category aimed to identify primary information about UFT in each case city to supplement and build on the data obtained already from document review. Interviewees were asked about the type of products distributed, benefits and disadvantages of UFT from the local authority perspective. In the second category, the aim was to identify the existing policy goals and objectives, current or planned UFT policy measures, and other information on targets and key performance indicators. The third section asked interviewees about the policy selection process, including influences and barriers.

The interviews were with transport planners and heads of transport strategy. The interviews were conducted mostly face-to-face and some by phone. The duration of interviews varied between 45 and 75 minutes. All interviews were recorded and transcribed. Data analysis was performed in two steps. First, the raw data were categorized for each city according to the categories identified in the interview guide; general, policies and policy process. In the second stage, the analytical categories identified from the literature were used for the cross-case analysis. An analytical matrix was used to collate data against each of these categories, which was then summarised for presentation in the paper. The data for section 4 came from both documentary and interview data, in order to identify the actual policy choices in each city. The findings in section 5 were primarily taken from the interviews, nevertheless triangulated against documentary data where possible, e.g. for details regarding project involvement and interactions between local and national policy, although sometimes this was for the raw data analysis that did not find its way into the summarised version presented here.

4. Presentation of case study data

4.1 Overview of the three countries: organisations and policy setting at each scale

It is important to note that Scotland and England will be treated as two separate countries in the context of this study. The UK has a devolved system of government, whereby transport responsibilities are managed at the devolved rather than UK level, being England and Wales, Scotland and Northern Ireland. The Department for Transport (DfT) is responsible for transport in England and partly in Wales while Transport Scotland is the main transport authority in Scotland. There are some differences between Scotland and England in transport

policy at local authority (LA) level; for example, in England, LAs publish local transport plans whereas in Scotland they publish local transport strategies.

Transport Scotland published the latest National Transport Strategy (NTS) in early 2016, with stated goals of providing accessible, safe, integrated and reliable transport with respect to economic growth, social inclusion and sustainability. The key outcomes of the NTS are improved journey times and connections, reduced emissions, improved quality, accessibility and affordability in transport (NTS, 2016). The NTS is supported by other national transport plans and policies, which also involves freight related issues, such as Clean Air for Scotland (2015) and Freight Action Plan (2006). Regional transport partnerships (RTPs) and local authorities in Scotland also publish their own documents (Regional Transport Strategies and Local Transport Strategies, respectively) in line with the NTS and other policy documents. The NTS has a limited coverage on UFT. Transport Scotland focus on UFT through an advisory group, which is called the Scottish Freight and Logistics Advisory Group (ScotFLAG). The advisory board provides the partnership between government and business established at the national level. There are 32 LAs in Scotland and 7 RTPs, however most RTPs have only one statutory duty, which is to develop a regional transport strategy, but they are dependent for its implementation on local and national government, who themselves also set transport policy.

In England, the DfT covers national transport goals through the Department for Transport Single Departmental Plan (2017), which focuses on economic growth, improving journey times, and providing safe, secure and sustainable transport. This document does not include indications for freight issues. Some UFT-specific guides published by the DfT include Local Authority Freight Management Guide (2007), Delivering a Sustainable Transport System: The Logistics Perspective (2008). Another document, Creating growth, Cutting Carbon: Making Sustainable Local Transport Happen (2011), is not specifically related to UFT but outlines the government's goals to create economic growth in the UK and to address climate change through cutting carbon emission caused by transport activities, which is in line with the EU objectives, and some of the reforms there such as the government's plans to devolve the responsibility for local transport fully to local authorities, which was done later through Localism Act 2011, also impact on planning for UFT. As with Scotland, UFT is managed at the local level. There are 353 local authorities in England, which are made of five different

types. They are county councils, district councils, unitary authorities, metropolitan districts and London boroughs. This study focuses on three metropolitan districts (Greater Manchester, Newcastle and Birmingham) and a unitary authority (Bristol). In addition, combined authorities started to be established since 2011 as a new form of local governance. Combined authorities are established by two or more city councils that come together to form a legal body to collaborate and make collective decisions across their boundaries

Sweden has various transport agencies, which are concerned with the transport system in the country. The Swedish Transport Agency (Transport Styrelsen) and The Swedish Transport Administration (Trafikverket) are two agencies that deal with road transport in addition to the other transport modes. Transport Styrelsen is responsible for preparing regulations while Trafikverket is responsible for making long-term planning for all transport systems and for building, operating and maintaining public roads and rail infrastructure in the country. The national transport strategy focuses on providing accessible, high quality, secure, safe and environmentally responsible transport systems. Sweden consists of 21 regions and 290 municipalities. Both regional authorities and local authorities have the power to build efficient transport systems within and across their boundaries. Similar to the approaches in Scotland and England, municipalities are responsible for regulating and organizing UFT activities. Swedish municipalities work together with regional authorities and national authorities in developing or executing UFT projects. Trafikverket has a particular interest in understanding freight transport related activities at not just the national level but also in urban and regional contexts. Unlike the national authorities in England or Scotland, Trafikverket has been involved in urban freight projects together with multiple actors. The projects focus on construction logistics at the urban scale and by-pass logistics activities across cities and regions (see the projects: CIVIC and By-pass Logistics). The key case study data are presented in Table 1.

Table 1. Case city data

Country	Sweden			England				Scotland			
Population	10,128,320			55,268,100				5,404,700			
National transport authority	Trafikverket and Transportstyrelsen			Department for Transport				Transport Scotland			
Number of local authorities	290			353				32			
City	Stockholm	Gothenburg	Malmö	Bristol	Birmingham	Greater Manchester	Newcastle	Aberdeen	Dundee	Glasgow	Edinburgh
Population	949,761	564,039	333,633	454,200	1,100,000	2,700,000 in 10 districts	292,200	228,990	148,210	606,340	498,800
Type of local authority	Municipality	Municipality	Municipality	City council	City council	Combined authority	City council	City council	City council	City council	City council
Dedicated UFT personnel	yes	yes	yes	no	no	yes	no	no	no	no	no

4.2 Policy and strategy documents

In the UK (both England and Scotland), city councils and combined authorities publish documents that set out their plans and strategies for transport for each five-year period. A similar approach is followed in Sweden where city councils produce traffic strategies. All these documents have similar motivations such as outlining their baselines concerning transport, public health and safety and air quality, setting achievable objectives and plans for showing how these objectives will be achieved.

Similar to the national level, local authorities publish a variety of documents. Some of the case cities publish documents that elaborate UFT goals and measures separately such as The Stockholm Freight Plan 2014-2017 (2015), Greater Manchester Freight and Logistics Strategy (2016), Sustainable Urban Logistics Plan for Dundee (2014), or the Godstrafikprogram för Malmö (2014). Similarly, some publish related documents such as air quality action plans and local and regional development strategies. These documents outline goals and implementation plans for other issues that have some impact on UFT and thus have some link to specific UFT measures that are later implemented, but not detailed specifically in these documents. Thus, specific UFT policy goals and specific measured objectives are less common than those for general transport or other environmental priorities. Indeed, often UFT measures are not included in policy documents but simply implemented and hence were only identified and discussed in the interviews.

The contents of these local documents are nonetheless influenced by national goals and objectives (see previous section), which are themselves influenced by the EU's transport policies with respect to air quality, road safety, mobility and sustainability. Reducing the level of emission is one of the areas that the EU focuses on concerning freight transport, including a target to reduce the level of emission from transport by 80% by 2050 in comparison to 1990 levels (European Commission, 2018). All three countries set very similar targets to the EU targets when setting their individual objectives (NTS, 2016; 2050 Pathways, 2013). In England and Scotland, national governments put a heavy emphasis on air quality action plans which is then replicated at the local level. In Sweden, the EU's impact can be observed more heavily than in the UK with respect to the identified policy measures and the involvement in EU projects. For instance, the Swedish case cities were the first ones to

introduce LEZs (Miljözoner), while the case cities in England and Scotland will start to implement LEZs by 2019. Second, the number of EU projects per city, which focus on UFT, is higher in the Swedish cities than the case cities in England and Scotland.

4.3 Policy targets in each city

Certain key performance indicators (KPIs) related to transport activities do appear in various documents such as local transport plans and strategies, air quality action plans and environmental strategies. They are usually in the form of percentages they would like to achieve relating to certain goals such as reducing emissions, reducing congestion or decreasing the number of road casualties. The targets developed by each city are listed in table 2. The levels of pollutants (CO₂, NO_x, PM_{2.5}, 10), road casualties, level of congestion, traffic counts, growth of general freight, growth of freight through harbours (where relevant), growth of freight through airports, journey time reliability, CO₂ emissions from council transport and number of cyclists are the KPIs that local and regional authorities mentioned in relation to freight traffic and general traffic. Most of these KPIs (except growth rates) are related to general traffic and in the majority of the cities they are not measured specifically for freight. Only Stockholm measures emission levels specifically considering freight vehicles and Gothenburg counts the number of freight vehicles travelling in the city centre.

Table 2. Case city targets

Country		Sweden			England				Scotland			
City		Stockholm	Gothenburg	Malmö	Bristol	Birmingham	Greater Manchester	Newcastle	Aberdeen	Dundee	Glasgow	Edinburgh
Safety	Road casualties	x	x	x	x		X	x	x	x	x	x
	Feeling of safety concerning heavy traffic among public			x								
Environment	CO ₂	x	x	x	x	x	x	x	x	x	x	x
	PM _{2.5,10}	x	x	x	x	x	x	x	x	x	x	x
	NO _x	x	x	x	x	x	x	x	x	x	x	x
	Percentage of HGVs not fulfilling the requirements of environmental zone			x								
Traffic	Total vehicle count		x		x			x		x	x	x
	Total number of HGVs	x										
	Number of HGVs on identified streets			x								
	Level of through traffic	x										
	Total distance driven by car or truck in peak hours	x										
	Modal split				x							
	Number of cyclists and pedestrians				x							
Quality	Journey times				x	x		x				
	Congestion		x				x		x			
	Level of accessibility on roads and streets by businesses	x										
Other	Percentage of road network maintenance											x
	Number of companies within logistics industry			x								

4.4 Policy measures in each city

The type of policy measures chosen varies based on the level of progress that each case city shows with regard to including UFT in their transport planning. According to the five categories of UFT policy measures defined by Kiba-Janiak (2017) (infrastructure, land use

management, access conditions, innovation & ideas, ecological freight transport practices), it is clear from Table 3 that access conditions are the most common types of policies among the case cities. Size restrictions, time window restrictions, designated loading and unloading bays, limited traffic zones and low emission zones are in this category. Innovation-driven policies and ecological freight practices are the least common types of policies. Land use management in the context of UFT can relate to the allocation of a piece of land for UFT operations or relocation of freight generating activities, the only example of which was the attention to dedicated loading bays, which was common across many cities.

Table 3. Policy measures implemented in each city

Measure type	Policy measure	Sweden			England				Scotland			
		Stockholm	Gothenburg	Malmö	Bristol	Birmingham	Greater Manchester	Newcastle	Aberdeen	Dundee	Glasgow	Edinburgh
Access conditions	Time window restrictions	x	x	x	x	x	x	x	x	x	x	x
	Loading/parking restrictions				x	x	x	x	x	x	x	x
	Size restrictions (including width, length, height)	x		x	x	x	x	x	x	x		
	Weight restrictions	x	x	x	x	x		x	x	x	x	x
	Congestion charge	x	x									
	Low emission zone (aka clean air zones, environmental zones)	x	x	x		p	p		p	p	p	p
	Walking speed limit zone		x									
Allow off-peak deliveries	p											x
Ecological freight transport	Air Quality Management Area				x	x	x	x	x	x	x	x
	Driver training							x				
	Vehicle recognition schemes					x	x	x	x	x	x	x
	Engine idling policy						p					
Infrastructure	Urban consolidation centres	x	x	p	x		p	x		p		
	Construction consolidation	x										
	Using public transport infrastructure for freight	p							p			
	Dedicated road for freight vehicles	p										
Innovation & Ideas	Delivery service plans					p	x					
	Freight route maps							x	x	x		
	Construction management plan				x							
	Guidance for designing loading and unloading bays						p					
	Freight vehicle priority traffic signalling								x			
Land use management	Designated loading/unloading bays	x	x	x	x	x		x		x	x	x

Note: p refers to measures currently planned

5. Influences on UFT policy choice

The case data in the previous section were used to establish the differences between the cities in terms of their actual policy choices. This section presents the findings of the cross-case analysis according to the analytical framework, based on the results of the interviews exploring how and why these choices came about. Rather than compare city by city, this section summarises the role played by each of the main influences on the UFT policy choice process, and also identifies some of the broader trends between the different countries. The three theoretical categories are drawn from Marsden and Reardon (2017) while the sub-categories within each of these three sections are taken from the previous papers on UFT policy covered in the literature review.

5.1 Policy context and governance dynamics

5.1.1 Collaboration between governance scales and within departments

Overall, local authorities' relationship with their national governments is based on collaboration rather than an enforceable framework. Collaboration between different departments is very common in the case countries but in varying degrees. The local authorities that have dedicated personnel show a higher degree of collaboration, whereby UFT planners work together with city planners and road safety officers when there is a new project in residential or industrial areas. According to the interviewees, the main motivation behind the collaboration is to identify solutions about how different requirements can be fulfilled and how transport modes can co-exist.

In Sweden, environmental zones are part of the national transport strategy, but municipalities deal with its implementation at the city level. EU and national projects also help municipalities obtain extra financial resources to be able to implement UFT measures. The municipalities also commented that implementation of policies as a result of these projects enables them to obtain legitimacy in the eyes of the national government. One of the interviewees in Sweden mentioned that *“These projects are contributing with money and resources but the most important thing I think is that they contribute for political acknowledgement. Even though we do not get our politicians with us, the projects have been the way to get questions up on their agenda.”* This enables municipalities to strengthen their hand when they want to bring UFT issues to the national agenda.

In England and Scotland, interdepartmental collaboration is also common. They do not have dedicated personnel for UFT (except Greater Manchester) but departments dealing with city planning, road safety and air quality work together when UFT related issues arise. However, the degree of collaboration and clarity in defining responsibilities concerning UFT between different departments was less clear compared to the case of Sweden. One Scottish interviewee said: *“We try to cover freight issues as only one small part of our job. It is the same for every other aspect. We have got all these different things and we do not have many people.”* More specifically regarding coordinating different policy areas into the overall transport strategy, another officer from Scotland stated: *“We had to cut down the policy and unfortunately freight is not part of the Local Transport Strategy. It is kind of a struggle to the departments in the council. Together with Development and Regeneration Services and Land and Environmental Services we have to include in the upcoming update on the Local Transport Strategy. Then, we speak to the colleagues from Air Quality and Economic Development teams to make sure that they are happy with what is happening.”*

At the same time, combined authorities in England provide an official framework to strengthen collaboration between cities. In addition to potential benefits of combined authorities, there is also a risk of power imbalance between cities involved in the same combined authority when developing strategies. Thus, authorities can have disagreements when designing joint transport plans. The interviewee from Transport for Greater Manchester raised the following issue *“There was no dedicated personnel until two or three years ago. We were having a look at a potential logistics site around Greater Manchester and there was a huge disagreement between districts and [consultancy company] on where those sites should be and we had a practical interest on this because of the transport implications.”*

5.1.2 Land-use planning

There is a common opinion among the local authorities that if a new development project is initiated, all relevant departments including transport planning should work together as the design of transport networks is an important element of accessibility and these new development sites should be accessible by all modes. Yet sometimes unexpected challenges arise. For example, Stockholm City municipality wanted to develop an online booking system whereby truck drivers can book loading and unloading bays in advance. According to the Swedish National Legislation, however, streets including kerbsides are considered public

spaces and they cannot be dedicated to the use of public or private parties. In England and Scotland, local authorities are also aware that land-use policies affect UFT and related transport policies. However, there is a lack of involvement of freight in land-use decisions beginning from the early stages of city development. For instance, when city planners grant companies (e.g. grocery stores) approval to open branches in city centres, they do not consider how deliveries will be made and if loading/unloading facilities can be designed to complete delivery operations properly. In order to tackle such problems, interdepartmental collaboration should be prioritized to increase awareness regarding freight in cities. In Scotland, municipalities recommend that delivery and loading requirements should be defined and they should be included in city development plans.

5.1.3 Role of non-freight transport policies

In the interviews, loading/unloading bays and pedestrianized areas were mentioned as the most common cause of conflict between freight and passenger transport needs. Loading/unloading bays are constrained by extended pedestrianised areas and cycling lanes. Freight vehicles are also constrained by bus lanes. Especially in Scotland (Aberdeen and Glasgow), there are designated bus lanes that freight trucks are not allowed to use. Local authorities use simulation models to visualise impacts of changes made in other transport modes. For instance, In Scotland, Glasgow and Aberdeen councils use traffic modelling to see how freight traffic would be affected if certain zones are pedestrianised or new bus lanes are added. In Sweden, they build low speed zones where pedestrians, cyclists and vehicles exist together.

Shared space is another issue where local authorities receive reactions from businesses and freight operators. The local authorities started to implement bold restrictions to provide more space for walking and cycling via pedestrianisation and removal of parking spaces. The local authorities need to consider the needs of urban freight movements such as building dedicated loading and unloading places as was brought up by one interviewee from Scotland: *“If you do not have the right parking controls and particularly the enforcement of parking, waiting and loading controls, they have got to drive around and look for finding a space to park. . . . So, all that extra movement of traffic obviously adds to congestion.”* In order to overcome these challenges, some local authorities and freight forwarders have initiated consolidation centre projects. These consolidation centres own electric vehicles which are allowed to enter

in pedestrianized areas with exemptions from time window restrictions, examples being Bristol, Gothenburg and Stockholm.

5.2 Resource availability

5.2.1 Financial resources

Lack of financial resources is the main reason why so many local authorities do not have dedicated UFT personnel or why some local authorities are not able to measure their KPIs in order to monitor their policies' performance. UFT resources are more seriously limited in English and Scottish councils compared to Swedish municipalities. There has been a recent change in governance of local authorities in England, creating combined authorities which can obtain more power and resources for the cities involved. In the case of Greater Manchester, it can be seen that they are more active in terms of considering UFT in their transport strategies.

In England and Scotland, national governments prioritized walking, cycling and public transport, therefore, funding calls target these priorities and local authorities design their strategies and policies around these priorities. If a local authority wants to implement policy measures concerning UFT, they need to find their own resources. For instance, Bristol, Edinburgh, Aberdeen, and Dundee are the examples from England and Scotland of cities involved in EU projects to obtain funds to develop freight solutions in their cities. Swedish authorities have likewise expanded their resources by active involvement in several UFT projects.

5.2.2 Dedicated UFT personnel

Stockholm and Gothenburg have dedicated personnel who are full time employees to deal with UFT. Malmö used to have dedicated personnel but, due to lack of resources, currently two individual transport planners handle UFT in addition to other tasks. In England, none of the individual councils has dedicated personnel. However, the newly combined authorities are entitled to have more power and more resources. Some of these combined authorities consider logistics and freight as crucial activities because of their contribution to growth and development. With this enlarged vision, combined authorities such as Transport for Greater Manchester established a separate department to deal with UFT. In Scotland, the local authorities do not have dedicated personnel. One interviewee in Scotland stated *“If we would*

have more personnel, we may dedicate more time towards freight or indeed any other individual area but we do not have resources to do it, that's the problem.”

5.2.3 Project participation

It is quite common that local and regional authorities are involved in EU projects, however the local authorities were revealed to have different motivations. While some of the authorities are involved only for exchanging knowledge and experiences, other authorities are actively involved in developing policy measures for their cities, particularly when the project can provide direct funding for such measures, often for a trial period. The case cities have joined various projects concerning city development, sustainability, urban mobility, public transport and freight transport (including both long-haul and urban freight). Even if they do not join the project themselves, local authorities can benefit when other actors such as regional authorities or universities become project partners to fund studies and pilots in the city area. The rate of participation in UFT projects is the highest in Sweden, particularly Stockholm and Gothenburg. In England, Newcastle, Bristol and Birmingham showed higher levels of participation. Scotland has the lowest numbers of local authorities participating in UFT related projects.

5.3 Legitimacy

5.3.1 Relationship with businesses and operators

Sweden and England demonstrated a higher degree of external collaboration compared to Scotland. Swedish local authorities in particular are willing to establish stronger links with other public and private organizations. For example, both Stockholm and Gothenburg are actively involved in several initiatives with universities and with private freight operators. In England there were also some examples where local authorities and combined authorities collaborate to implement freight focused policies, such as the Bristol and Bath consolidation centre. The majority of the local authorities in Scotland mentioned that they experience a lack of interest from businesses and operators. One interviewee from Scotland stated that: *“Local hauliers, trucks and logistics can reach me or my engineers if they need to and we are open to that, and there is a small number who do contact us but as an industry they are not knocking our door down.”* A regional transport authority TACTRAN working with local authorities in Dundee and Perth tried to initiate a consolidation centre project but ultimately it was not taken forward due to lack of interest from the private sector.

Sweden is the most proactive country in terms of working with representatives of the private sector, stating that businesses and operators should be in close cooperation because UFT policies impact on freight operations within cities. This is also related to the fact that the case cities from Sweden implement various dedicated measures to regulate freight activities, but it is important that they do it in a collaborative manner. They developed a principle which requires that businesses and freight operators should be involved in the policy-making process from an early stage as it will enable the local authorities to obtain professional input for their transport planning and to develop policies that are more efficient. A Swedish local authority stated: *“You should not do something which you did not really ask in advance; check with stakeholders and then you can just do it. . . . We implement the solutions when we get all those professional views. If there is a specific interest, we get input and we can adjust some parts and develop our own proposals.”*

The choice of policy measures for freight traffic is usually driven by local authorities rather than operators. On the other hand, the local authorities hesitate to implement many restrictive policies as they do not want to drive away businesses and freight operators, which contribute to economic prosperity in the cities. This was explained by the interviewee from Bristol as *“We talked to the customers of the UCC around the city before we implement any restrictive movement policies and it threatens the deal for freight operators.”* It was also identified that the lack of acceptance from private stakeholders can weaken political positions of local authorities when they want to implement policies. Consultation processes, freight forums or stakeholder meetings become particularly useful to obtain the support as well as the feedback from private stakeholders. A local authority from Sweden stated: *“It is a matter of choosing the way of compromising instead of regulating. It is easier because you do not make decisions that are not welcomed by them.”* The local authorities in England and Scotland are increasingly aware that they need to engage with private stakeholders, but the issue for them is not so much that the operators will react against policies but that businesses and operators are not even willing to cooperate in the first place unless they see a specific problem. One noted that *“It’s often difficult to get the businesses to participate and give up the time to come and participate in these meetings but we try as much as we can to make sure that we understand what their needs are and we are doing things to help them.”*

5.3.2 Public acceptability

All case cities acknowledge the importance of gaining public acceptability and they want to increase awareness concerning freight among residents. They consider it crucial to make citizens understand the dynamics behind transport goals and policies. According to the interviewees, citizens were considered less sensitive towards UFT policy measures than freight operators. However, it was identified that there is an impact of changing geography and lifestyles on public acceptability; for instance, when the population of households agglomerate closer to the city centres, they may become more sensitive towards some freight policies such as off-hour deliveries. Another issue is that citizens might be disturbed by an increasing freight flow in a particular area and they can raise complaints to local authorities.

On the other hand, public acceptability becomes particularly important if local authorities implement policies which will affect not only freight vehicles but also citizens in general such as congestion charging. Congestion charging was accepted in Sweden by a public vote. A similar approach was taken in Scotland (Edinburgh) where a referendum was held on the possible implementation of a congestion charge but it was rejected. A Swedish interviewee commented: *“Freight has not been an issue for the public but the mobility and what we do on street level is more of an issue for the public acceptance. When it comes to policies like congestion charging, it is really important to get public acceptance on that.”*

In addition, public acceptability matters for the local authorities because it has a direct impact on local politics and governance. The lack of public acceptability may have adverse impact on the accountability of elected decision-makers as acknowledged by the interviewees. One English interviewee commented that *“It is absolutely vital to have the local population on board. Ultimately these are political decisions and politicians are elected. They have to satisfy their communities and we have to tell a story that persuades the voters it is the right thing to do.”* Similarly, from Scotland: *“All of our policies need to be publicly acceptable. Decision-making bodies, local authorities, [regional transport authorities] are all elected and therefore have to be accountable to the public.”*

The local authorities establish consultation processes. Transport plans and planned policies go under different forms of public evaluation to obtain feedback from different parties before they are officially implemented. Consultation processes consist of several steps. Local

authorities send out questionnaires to citizens to obtain their opinions concerning policy measure(s) that they plan to implement. Later, local authorities identify the policies and roadmaps for implementation in light of the feedback.

6. Conclusion

The first finding from this study is the identification of policy goals and measures for UFT across the 11 case cities. The goals are essentially identical: environmental protection, economic growth, reducing congestion, enabling safe and secure transport and creating vibrant and attractive city centres. In terms of policy measures to accomplish these goals, the study confirms previous literature that restrictions are the most common type of measures (Quak, 2008; Ballantyne et al., 2013; Lindholm and Blinge, 2014), yet there was a noted difference across the cities, with Swedish cities more likely to choose more interventionist measures. Congestion charges, low emission zones, time windows, weight and size restrictions are the main types implemented by the Swedish cities. More voluntary measures such as vehicle recognition schemes are preferred in Scotland and England where there is evidence of less collaboration between public and private sectors hence a reluctance on the part of local authorities to enforce restrictive measures.

Setting targets and collecting performance measurements are crucial activities that help local authorities quantify the benefits of policy measures and determine if they have achieved their goals and what improvements might be needed (Lindholm, 2013). However, only a limited number of the cities perform such monitoring. All case cities measure emission levels but most perform the measurements for the entire traffic activity; only very few cities analyse emission or traffic levels with respect to freight vehicles. The other most common targets are the number of road casualties, journey time reliability and level of traffic on local roads and trunk roads, but these are difficult to link with specific policy measures. It was mentioned by the case cities that the main reasons why local authorities do not perform ex-post analysis of the policies is a lack of financial and human resources. This finding is also confirmed by Fossheim and Andersen (2017), who found that many freight plans are missing a thorough justification of whether their freight strategies were successful and their targets were met. The lack of emphasis on specific targets and post-hoc monitoring suggests that UFT policy measures are chosen from the pool of common measures described above more because of public acceptability, frequency of use elsewhere and ease of implementation than because of

a well-justified, context-specific link with policy goals. This does not necessarily mean that the measures chosen are inappropriate, but that there is a lack of strategy, reviewing and updating according to achieving specific policy goals.

The next conclusions relate to the influence on policy choice of policy context and governance dynamics, resource availability and legitimacy – the three types of influence identified by Marsden and Reardon (2017). There was in fact significant interrelation between the three types of influence, but it is unsurprising that to some extent resource availability underpins all of them. Availability of resources (particularly funding) allows the hiring of dedicated personnel, which in turn provides the ability to increase integration with other policy areas (policy context and governance dynamics) and to interact with industry and citizens (legitimacy). While city involvement in funded EU projects was considered primarily as a source of resources, interviews revealed that it is also important for obtaining legitimacy by being active in the UFT policy arena, collaborating with other cities with the potential to identify and transfer successful policies from elsewhere. The more proactive cities have a vision running through their internal and external activities. The analysis revealed a strong relationship between the level of participation in UFT projects, the level of integration of UFT in local transport policy documents and the level of intervention in UFT policy measures. The findings of this study confirm previous studies (e.g. Kiba-Janiak, 2017; Lindholm and Blinge, 2014; Lindholm and Browne, 2013) highlighting that UFT has been given limited attention in local transport planning in many cities which primarily focus on public transport and infrastructure investments. Yet the interviews showed that local authority planners are aware of the importance of UFT and the need for policy measures. Where they have experienced challenges integrating UFT within their governance dynamic, it is often a result of a lack of resources and a realistic decision to focus scarce resources on other areas.

Marsden et al. (2011) argued that policy learning requires trust and knowledge exchange between different parties and curiosity among the policy makers. The majority of the local authorities in this study consider collaboration between public authorities and private stakeholders (cf. Lindholm and Behrends, 2012; Fossheim and Andersen, 2017) as essential and stressed the importance of engaging with stakeholders as the collaboration can have positive impacts on policy choice as well as outcome (Lindholm and Browne, 2013). Our study showed that such interaction is more common in Sweden than in England and

particularly Scotland, where interviewees revealed a lack of interest on the part of the private sector. Freight operators obviously prefer less interventionist policies but, as stated by Lindholm and Blinge (2014), if local authorities want to achieve their local transport goals, they need to develop policies which combine incentives, agreements and enforcements, and they need to develop such complex policies in collaboration with other stakeholders. Our research showed that increased awareness of problems with local air quality in the UK is the key driver of political salience that is beginning to unite local and national transport policy goals and is expected to lead to more stringent policy action. Yet the actual policy choice to address this problem must be politically acceptable. In Sweden they have made better progress in working with the private sector to make restrictive policies more acceptable.

Looking to the future, some policy recommendations arise from the preceding analysis. First, where it is not already happening, local authorities must increase opportunities for learning from and collaborating with the private sector. Second, if not in place, dedicated personnel for UFT are essential to provide a clear point of contact, knowledge development and policy champion to pursue UFT goals. Third, an increased focus on collaboration with other departments, including land-use planning, and non-freight policy areas such as pedestrianisation, but this in itself can be achieved more effectively with dedicated UFT personnel, which in turn requires financial resources.

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