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Reality check on parking policy

Evaluation of car parking policy processes in Vantaa

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Abstract

Municipalities in the Helsinki region have many sustainability goals and one of which is to be carbon neutral by 2030. To reach these sustainability goals most of the listed practices emphasize increasing other ways of mobility than automobility but at the same time do not mention practices that could decrease automobility. One effective way to influence the choice of mode is parking policy.

This study aimed to find out, does parking policy in practice support sustainability goals and what kind of parking mindsets there are amongst the urban planning experts in Vantaa. The study is based on the literature on parking policies and policy categorization. The research material for the thesis was collected through focus group interviews. Six focus groups were formed from six different departments in the urban environment division.

The study revealed that mindsets in Vantaa toward parking are conventional site-focused. However, there are signs that mindsets are shifting towards a more market-based mindset. The implementation of the parking policy is also a bit contradicting the larger-scale sustainability strategy of Vantaa.

The results of focus group interviews can be seen as reliable. Results indicate a need for a stronger parking strategy and communication of it within the city organization. Establishing a parking strategy would support Vantaa's sustainability goals and clarify how to implement parking policy.

Keywords Parking, policy, focus group, city of Vantaa

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Tiivistelmä

Pääkaupunkiseudun kaupungeilla on monia kestävyystavoitteita, kuten hiilineutraalius vuoteen 2030 mennessä. Näiden tavoitteiden saavuttamiseksi korostetaan kestävien liikkumismuotojen lisäämistä, mutta samaan aikaan autoliikenteen vähentämistä ei mainita. Yksi tehokas keino vaikuttaa kestävämmän liikkumismuodon valintaan, on pysäköinnin toimintamallit.

Tämän työn tarkoituksena oli selvittää, tukevatko pysäköinnin toimintamallit Vantaan kaupungin kestävän kehityksen tavoitteita ja millaisia ajatusmalleja Vantaan kaupungin kaupunkiympäristön työntekijöillä on pysäköinnistä. Diplomityön tutkimusaineisto kerättiin kuuden ryhmähaastattelun avulla. Ryhmähaastatteluissa haastateltiin kuudella eri osastolla työskenteleviä henkilöitä Vantaan kaupungin kaupunkiympäristön toimialalla.

Tutkimuksessa selvisi, että ajatusmallit Vantaalla pysäköintiä kohtaan ovat perinteisiä kohdekohtaisia. Kuitenkin ajatusmallien siirtymistä enemmän markkinaehtoiseen pysäköinnin ajatusmalliin on nähtävillä. Käytännössä pysäköinnin toimintamallit ovat myös hieman ristiriitaisia kestävän kehityksen tavoitteiden kanssa.

Haastatteluiden tuloksia voidaan pitää luotettavina, koska haastateltavat mainitsivat samoja asioita toisistaan riippumatta. Tulokset viittaavat siihen, että pysäköinnin strategiaa ja sen kommunikointia kaupungin sisällä tulisi vahvistaa. Pysäköinnin strategian vahvistaminen tukisi Vantaan ilmastotavoitteita, sekä selkeyttäisi suunnittelun käytännön ratkaisuja. Haastatteluiden pohjalta tehtiin myös suosituksia uusiin käytäntöihin pysäköinnin suunnitteluun.

Avainsanat Pysäköinti, toimintamallit, ryhmähaastattelut, Vantaan kaupunki

Contents

Preface

At the end of my master's degree, there are multiple people whom I am very grateful for. I am thankful for my friends and family, whose mere existence makes life worth living and therefore this thesis and degree also possible.

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In Helsinki, 21st September 2022

Ella Uotila

1 Introduction

Municipalities in the Helsinki region have many sustainability goals and one of them is to be carbon neutral by 2030. At the same time, the capital area is expected to double its population by 2050. To reach the sustainability objectives regarding transportation in a growing capital area, there are a few ways that are commonly presented in the municipalities' strategies and policies: development is concentrated in areas with public transportation (transport-oriented development), the city structure is densified, the amount of sustainable mobility is increased by investing in public transportation, walking, and cycling networks, and road pricing is established.

Emissions from transport cover about 30 % of the Helsinki capital region all emissions and in Vantaa about 40% in 2020 (HSY, 2022). Most transport emissions are from road traffic. Nationally of road traffic emissions 54% were from private cars in 2019 (Traficom, 2021). Most of the municipalities in the capital region try to achieve carbon neutrality by 2030. In MAL 2019 one goal is to increase the amount of cycling, walking and public transport trips instead of private car use. According to the policies this is achieved by concentrating development around public transportation stops and investing in cycling, walking and public transport networks. Also, Vantaa's objective with parking is to promote the attractiveness of Vantaa centres, accessibility of services and use of sustainable mobility, such as cycling and public transportation. (Ramboll, WSP, Vantaa, 2020).

Most of these practices lean toward a way of thinking that increasing other ways of mobility and investing in them will somehow automatically decrease the number of trips made by a private car. However, policies that make automobility harder would reduce driving more than policies that make using public transport, walking, or cycling easier. Most of our city structure is car-dominated, so policies that do not mention automobility still favour driving. Favouring driving makes also not driving difficult because a car-dominated environment is hostile for other ways of mobility (Manville & Pinski, 2020). Making driving harder is yet politically difficult which most likely is the reason it is left out from the city strategies that seemingly pursue a more sustainable future.

Car parking is an essential part of automobility since cars spend most of their time at rest, on average 95% (Shoup D. , 2005). Parking is a big part of the built environment and the largest land use devoted explicitly to a single transportation mode. (Manville & Pinski, 2020). Challenging current parking practices is a part of going toward a more sustainable and just city (Syrman & Kanninen, 2015). Even though parking is usually restricted by

time, charge, and standards, it is not enough compared to the sustainability goals.

To explore these contradictions between parking policy and sustainability goals, my thesis research questions are:

- How to implement parking-related vision and strategy towards more sustainable ways of mobility in practice?
- What kind of attitudes or mindsets are there towards parking and what kind of effect do they have on planning?
- What kind of mindsets do the experts have towards parking in Vantaa?

To answer these questions, focus group interviews with experts from the city of Vantaa were done. The participants were chosen from the city of Vantaa urban environment division. Parking in Vantaa is explored also through an example of Kivistö, although parking policies cover the whole of Vantaa.

The hypothesis was that there are different mindsets about parking within the city organization despite the strategies towards a more sustainable transport system and that parking policies favour driving at the cost of other ways of mobility.

2 Theoretical background

2.1 Policy typologies

In this chapter, policy classifications will be presented. In Barters parking typology broader mindsets will be introduced to classify parking policies. Then more detailed classification of policy tools in spatial planning will be presented.

2.1.1 Barter's parking typology

Barter has introduced three mindsets to classify parking policies to clarify the choices for parking policy. According to Barter, there is confusion on distinctions between policy alternatives. This confusion can influence the built environment because parking shapes both transport patterns and the built fabric. There is an absence of a widely understood typology of parking policy mindsets that could clarify choices between parking policy alternatives. (Barter, 2015).

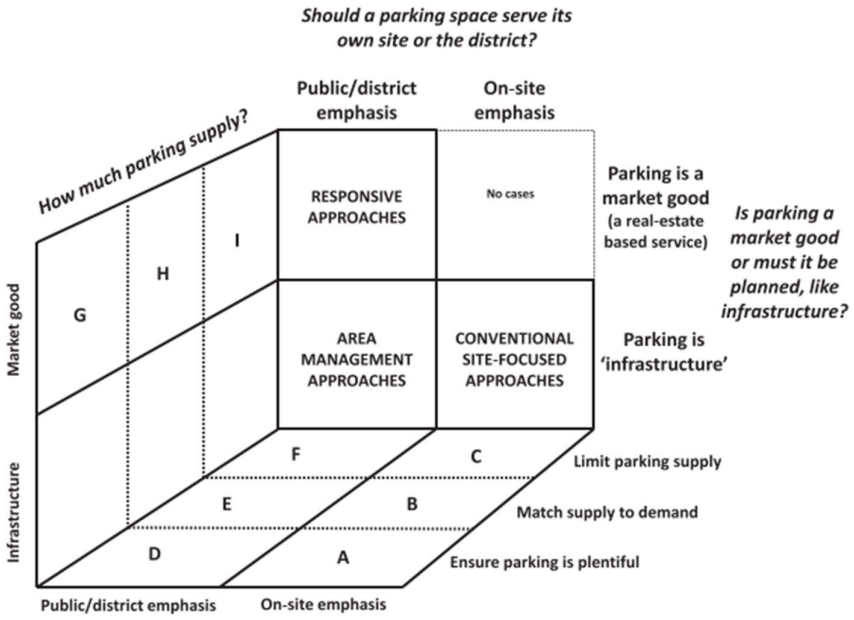
Mindsets shape the terms of discussion and thinking but are also influenced by context, by practice and discourse. Policy practice affects the framings of parking. The **three mindsets** are based on **two main criteria** in Barter's typology. The first criterion is whether parking facilities serve on-site or district. On-site parking means that parking is seen as something that should be provided on every site where parking facilities that serve their district means that parking serves many sites within the surrounding area. The mindset for on-site parking is connected to car-dependent, car-based accessibility assumptions. The second criterion is whether parking should be planned based on "engineering" guidelines that are heavily regulated by the government or based on market mechanisms where parking is a market good. (Barter, 2015). The mindsets and criteria are illustrated in picture 1. There is also a third criterion on the mindsets that describes the attitude to parking supply. In picture 1 the attitude to supply is simplified to three possibilities: ensure parking is plentiful, match supply to demand and limit parking supply. (Barter, 2015).

<u>Mindsets</u>

- The most widely applied mindset is 'conventional site focused in which parking is thought of as being on-site infrastructure, where parking is viewed to be necessary for every site. In this approach, it is assumed that government planning is needed because private initiatives will not supply correctly. (Barter, 2015).

- ‘Area-management’ mindsets see parking spaces as serving the whole area instead of just a specific site. Dense, inner-city areas often emphasize public parking because demanding on-site parking becomes difficult. On-street parking management needs to be more intensive also. In this mindset, parking must be planned but not necessarily provided by the government. (Barter, 2015).

- ‘Responsive’ mindsets see parking as a market good rather than ‘infrastructure’ and parking is a real estate-based service. (Barter, 2015).



Picture 1. Barter’s parking typology (Barter, 2015).

2.1.2 Spatial planning policy categorization

Exploring spatial planning policy tools is crucial for identifying how to address complex societal objectives in planning practice. The categorization of spatial planning policy tools is important for making comparisons and assessments of the governance of spatial planning in a different context. Policy processes are often path dependent. It means that when a policy procedure or tool is once used, there is an increased probability that it will be repeated in future policy-making processes. Studying policy tools makes it possible to observe some of the wider dynamics of public policy decision-making processes. (Stead, 2021).

One of the most well-known categorizations of policy tools is the model, where Cristopher Hood (1986) classified policy tools into four sets called NATO, meaning Nodality, Authority, Treasure, and Organization (Stead, 2021).

- 'Node' is a junction of information channels and nodality means the quality of being in the middle of information or social network. Nodality describes the government's ability to traffic information. Nodality denotes how the government is equipped with a position from which it can dispense information and also draw in information. The limiting factor is credibility, meaning how the government uses information. At least to some degree governments are 'nodal'. They may form a central presence in an informational sense, in the form of a 'figurehead' and often they are in a central place in their domain. Nodality can include tools such as surveys, registration, advice, and training.

- 'Authority' denotes the regulatory tools of government. It means the possession of legal or official power, that has the right to demand, forbid, guarantee, or adjudicate. Authority is traditionally seen as one of the defining qualities of government. Authority can include tools such as inspections, certifications, licenses, and prohibitions.

- 'Treasure' means for example the fiscal dimension of tools. Government can use treasure tools to influence outsiders or buy information. Treasure can include tools such as consultancy services, grants, taxes, and subsidies.

- 'Organization' means the direct action by the government. It is the physical ability to act directly using its own capabilities, meaning land, buildings, materials, workers, and bureaucrats. In many cases, organization is linked with the other three. Organization can include tools such as public archives and customs. (Margetts & Hood, 2007).

NATO-scheme is presented in table 1. In the table, there are examples of parking policy tools, and the dimensions of these tools are described through the four sets. In the classifications of Hood and Stead, one policy tool is placed into one of the sets, but in table 1, the policy tool is thought to have all four dimensions in some way. Also, the meaning of 'Treasure' in this table is thought to be broader than just fiscal. 'Treasure' in table 1 can be something to be gained from the policy tool, such as acceptability from the public.

Hood classifies these sets as separate and distinct while recognizing that these types of tools often require a combination of nodality, authority, and/or

treasure tools to put organization in place. This classification also further distinguishes policy tools into effectors and detectors, where effectors effect a change and detectors detect a change in a policy environment. (Stead 2021).

Each of nodality, authority, treasure, and organization can be used as the basis for tools of both detecting and effecting. Meaning that government can obtain information simply on account of its nodality, by buying it, by officially demanding it, or by extracting it with some physical device. It can send out messages based on its nodality, by authority, by treasure and by organization, trying to influence the world outside. Margetts and Hood describe the properties in simple terms: 'nodality' works on your knowledge and attitudes, 'authority' on your rights, status and duties, 'treasure' on your bank balance, and 'organization' on your physical environment or even on your person." (Margetts & Hood, 2007).

'Effectors' and 'detectors' can be replaced by the distinction between substantive and procedural tools. Substantive means policy tools that directly affect the delivery of policy objectives and procedural policy tools refer to those that affect the process and procedures of developing policy. Substantive and procedural tools are closely interlinked. (Stead 2021).

Table 1. NATO scheme with selected examples (modified from Stead 2021).

	Nodality	**Authority**	**Treasure**	**Organization**	**Policy tool**
Detectors	Gathering information, strategy progress	Strategy/plan	Savings in investments for automobility-based infrastructure -> Carbon neutrality	Public archives	**Measures of car use reduction**
	Gathering information	Regulation	Acceptability of development	Law	**Public event (resident evening)**
Effectors	Restrictions	Plan	Paid within the development	Guidelines	**Minimums**
	Restrictions	Plan	Investment in public transport, the cycling network -> Carbon neutrality	Guidelines	**Standard connected to area type/public transportation accessibility**

Spatial planning includes many other policy instruments than just regulation alone, although many of the most frequently mentioned tools of spatial

planning are regulatory. Achieving complex and interdependent planning goals, such as sustainability, require policy tools beyond regulation, such as information provision, cost-benefit analysis, and participant involvement, as well as procedural and substantive tools. (Stead 2021).

2.2 Parking policy

This section presents some parking policy tools that are commonly used in Finland and abroad. Parking is one part of policies that make driving cheaper and easier than it should be, when thinking about the cost of driving for society, such as congestion, air pollution and crash costs. Inadvertently all other modes are made more difficult because of the physical characteristics of infrastructure, such as parking lots and curb cuts, when driving (and parking) is made cheaper and easier. (King, 2022).

The goal of parking policy varies depending on the dominant mindset towards parking. For example, if the mindset is conventional, the central goal is to avoid parking scarcity and if the mindset is market-based, the objective is to ensure that demand, supply, and prices are responsive to each other. (Barter, 2015). Most cities internationally have a larger vision of going towards a more sustainable and efficient transportation system, and parking is one part that serves these wider urban and transport policy goals.

2.2.1 Land use and transportation

The built environment can be measured through the "Five Ds", which are density, diversity of land uses, destination accessibility, distance to public transportation and design of streets. Walking and using public transport could be easier for example in areas that are dense with narrow streets and a mix of uses but driving in these places would be more difficult. Then again, sprawling neighbourhoods with detached homes with wider streets could make driving easier and walking and using public transport more difficult, because destinations are fewer and further between. Parking has the possibility of changing people's travel behaviour since it is a dominant fact of driving. However, parking is only sometimes reflected in the Five Ds. Parking's role can be overlooked because the price of it has shifted in the property market. (King, 2022).

Another planning tool that concentrates on land use, public transportation, and density, is transit-oriented-development. In TOD the aim is to reduce the use of private cars by concentrating the urban development around a public transport stop, usually a train station, that is accessible by walking. Guiding people to use public transportation is also a way of handling congestion and limited space in dense areas. Excessive parking requirements are

problematic especially for places where more transit-oriented development is desired (Barter, 2015). The goals of a more compact, walkable and cyclable city structure around public transport stops, and minimum parking requirements are contradicting. Private car use is supported by planning (e.g., parking minimums) that provide parking spaces at homes, workplaces, shopping, and recreational places. This affects city structure in a way that activities within neighbourhoods disappear, the urban structure becomes made for cars and discourages walking, and public transport becomes unthinkable. Places of work, shops and recreation do not need to be close by if private cars can be parked proximity of home. The prioritization of public transport does not work if a big part of cars is located near homes and the public transport stop is hundreds of meters away and the situation is the same at the destination. (Knoflacher, 2006). Plentiful parking makes driving easier, but parking can also make *not* driving harder. On-street parking and parking that is located on the surface, push buildings away from each other, making walking distances longer and unpleasant and making public transport less effective by reducing density. Structured and underground parking reduces density because it takes space away from housing and business, even though it consumes less land. (Manville & Pinski, 2020).

Manville and Pinski (2020) argue that travel behaviour associated with transit-oriented development arises not from the presence of rapid public transportation but the absence of parking. Policies that make parking more difficult reduce automobility more than policies that make using public transport easier.

One key question of parking policies is the location of parking. On-site management requires parking in the proximity of certain development, area management within a certain area, park-and-ride provides parking in the proximity of public transportation stations and etcetera. (Pojani;Corcoran;Neil;Mateo-Babiano;& Stead, 2020). Knoflacher (2006) suggest as a solution to introduce charges in relation to benefits. This would mean that people who park at home would have to pay more than people who park at least as far away as the nearest public transport stop in a centralized garage. The monthly fee for parking in a centralized garage would be the same as the cost of a monthly ticket for public transport. The fee would also include a public transport ticket. Parking at home would be more expensive but still get one monthly ticket for their payment. Knoflacher argues in his paper that these problems can be solved by moving cars to garages and locating garages in a way that they are only as accessible as public transport stops at all origins and destinations. He also argues that the average person will use the car if the walking distance where the car is parked is closer than the public transport stop. Car use will only increase if parking is located close to human activities.

There are also places where is no on-street parking. Tokyo in Japan has banned on-street parking on many streets, which makes fake on-street parking permits useless. Before residents can buy a car, they need to prove they own or rent an off-street parking space. An overnight ban and a proof-of-parking requirement makes car owners responsibility to pay for parking. This policy has led to an active market in off-street parking. This type of policy is appropriate for Tokyo since a small number of on-street parking spaces can accommodate only a small share of many residents. (Pojani;Corcoran;Neil;Mateo-Babiano;& Stead, 2020). Another place, where's no on-street parking, is Västra Hamnen in Malmö, where car parking is in centralized garages and hidden in buildings. Also, in Vallastaden in Linköping, there's no on-street parking or parking on the premise, and parking is in garages called 'mobilitethus', mobility houses. In Linköping, the municipality-owned parking company built the mobility houses and it has not been economically profitable, but it was seen to be a good solution in the long run. The parking company is also committed to the Linköpings goals for a more sustainable transport system. (Vaismaa, ym., 2019).

Arguments for a more compact urban structure are based on the benefits of bringing activities closer to one another. The relationship between the density of urban structure and sustainability of urban development is however complex and a question of both city regional scope and policy integration. (Syrman & Kanninen, 2015).

2.2.2 Parking minimums and maximums

Parking minimums usually mean on-site minimum requirements for parking spaces. It means that for every development there is a number of parking spaces that are connected to some quality of the development. In practice, it means for example x number of parking spaces towards x amount of gross floor area. Minimums can vary depending on qualities such as the type of the building, type of the area or public transport accessibility. In this way minimums strongly determine the parking supply. Parking minimums are a political decision. Minimums do not rely on scientific methods for determining the amount of parking.

Managing parking supply in a certain way matters because it can affect travel choices. When parking is restricted by supply or price, people who drive a car respond by doing one or more of:

- Park somewhere else farther away,
- change the location of their destination,
- change the time of travel,

- change the mode used for travel and
- not travel at all. (King, 2022).

Minimum parking requirements respond to a real problem, which is spillover parking (Shoup D. , 1999). If there are not enough parking spaces, and parking on-street is cheaper than off-street parking, it will cause cruising for parking (Shoup D. , The ideal source of local public revenue, 2004). Often when people complain that they cannot find a parking space, it means that they cannot find a free space exactly where and when they want one (King, 2022).

Minimum off-street parking requirements for new development are the most used parking policy measure, even though in recent literature it gains wide opposition (Syrman & Kanninen, 2015). Even though parking minimums are a common parking policy internationally, there are some examples where parking minimums have been replaced by maximums, especially in denser urban centres, like in Melbourne, Mexico City and London (Pojani;Corcoran;Neil;Mateo-Babiano;& Stead, 2020).

Parking minimums generally have flexibility in different ways, meaning that the minimum varies depending on the accessibility of public transport, area type (housing type, business centre, offices) or if parking has properties that increase the efficiency of parking or land use, such as shared parking or utilization of underdeveloped land. One example of the flexibility of parking standards is Rotterdam in the Netherlands, where local authority allows a project developer to deviate from the parking standards under specific circumstances such as providing shared parking or introducing measures that support the reduction of car use. (Pojani;Corcoran;Neil;Mateo-Babiano;& Stead, 2020). Also, in Malmö Sweden, the amount of parking spaces depends on the measures done on guiding transport; the more the measures, the fewer parking spaces are required (Vaismaa, ym., 2019).

Minimum parking requirements favour driving at the expense of other modes of transport. However, the supply of parking is usually not part of the municipal or region's long-range transport planning. Cities and regions present futures where automobility is not the primary way of moving but at the same time do not mention the supply of parking as a strategic objective. Parking is a transport issue in land use planning and an invisible problem for traffic analysis. It makes achieving planning objectives, such as decreasing social harms of driving a car, offer alternatives to automobility, and building denser, more walkable communities, more difficult. (King, 2022)

Minimum parking standards have many ramifications for land use planning and the urban structure. The urban structure then influences travel behaviour and travel options. Increasing the amount of off-street parking has

negative effects on the built environment such as density, proximity, diversity of land uses etc. Reforming off-street parking is necessary to change travel behaviour and make people shift mode, which will help to achieve environmental, economic, or social goals. Increasing the supply of parking is an effective way to keep the cost of driving low and hidden from people who drive a car. (King, 2022)

Governments recommend residents to drive less for sustainability, congestion relief and public health and walk, cycle or use public transportation instead. However, at the same time, same governments often have minimum parking requirements. This means that governments recommend a different course of action while the urban structure is arranged in a manner that encourages different behaviour. (Manville & Pinski, 2020) More parking is associated with more driving but asserting causality between parking supply and travel behaviour is challenging (King, 2022).

2.2.3 Parking pricing

The problem with the cost of parking is, that everyone pays for parking, even if you do not drive. Everyone pays for parking indirectly, when developers provide the spaces needed to meet the minimum parking requirements. The cost of parking is included in housing, goods, services, and office rents. People cannot choose to pay less for parking by using less of it. Minimums address the problem where if a land use does not provide enough off-street parking, motorists will park on nearby streets. The on-street spaces are scarce and if they are also cheap, there will be a competition of these spaces. This leads to more parking minimums. (Shoup D. , 1999). According to Shoup, on-street market pricing would help with the spillover more efficiently than requiring off-street parking minimums. The market price for on-street parking is the price that matches demand with supply and keeps a few spaces vacant. (Shoup D. , 1999).

Bundled parking means that the cost of parking is included in the cost of the housing instead of paid separately. Bundling is often an artefact of land use regulation. Bundling shifts the cost of driving into the property market, and this can support private car use. This is an example of how policies represent an important connection between land use and transportation and should be integrated. Bundling means that residents' residential parking costs are not connected with how much they drive since they pay for parking in their housing purchases. This and the certainty of vehicle storage could affect how residents with bundled parking travel. From this logic, you get the prediction that households with bundled parking will drive more than households without it. Bundled parking could affect the decision to own a car leading to

people without bundled parking owning fewer cars and driving less. (Manville & Pinski, 2020)

There are other reasons to drive and own a car but bundling parking is just another measure to make automobility more accessible. Manville and Pinski suggest that households without bundled parking are more likely to use public transportation than households with bundled parking. Bundled parking may nudge people away from public transport. Many cities might have land use regulations that undermine their transportation objectives if bundled parking indeed nudges people away from public transport and toward driving. (Manville & Pinski, 2020).

It is a common objective of parking policy to target the costs of parking to car owners and users, instead of the cost being included in the development. This goal links also to the need to provide affordable housing. In Melbourne's central city area, there is some unbundling of housing and parking markets. In Melbourne, the default is for housing to include car parking. Avoiding this is possible but involves trying to detach parts connected to car parking provisions from housing. These unbundled markets do not have explicit policy support and there are other barriers, such as financial practices and property title systems, to unbundling housing. (Pojani;Corcoran;Neil;Mateo-Babiano;& Stead, 2020).

2.2.4 Societal acceptance

Parking policies can support wider transportation and societal goals. However, parking issues often cause a stir. Societal acceptance is important but difficult to get if different professionals disagree on parking management and policy. Also, the residents usually see parking rights differently than planning professionals. Many feel that cars are essential for families and small businesses and feel responsibility towards one's own family rather than towards common large-scale problems such environment. (Syrman & Kanninen, 2015).

Parking policy measures require changes in user behaviour to produce positive effects and that is why applied measures must be accepted by parking users. Travel behaviour is not only a product of rational processes, but upbringing, feelings, and habits play a major part of travel behaviour. Upbringing, feelings, and habits however can be influenced to change travel behaviour and that is why communications and acceptance need to play a key role in parking policies. (Milosavljevic & Simicevic, 2019).

Communication about parking policies is often carried out by the local authority. However, often the only communication is how the system works,

such as time restrictions and permits. Parking often has a negative image among drivers, retailers, and politicians. Communication should emphasize the importance of mobility and parking-related problems that are meant to be resolved and promoting the parking management concept. (Milosavljevic & Simicevic, 2019).

3 Case study background

3.1 Sustainability goals and transportation in Vantaa

Presenting the sustainability goals in this chapter, the main interest will be on transport and land use related goals. *Vantaa's strategy's 2022 – 2025* one focus point is being resource-wise and carbon-neutral. The goal of being carbon neutral is considered for example in land use and construction. There's also a *Resource Wise Roadmap* that executes the sustainability and climate strategy. The roadmap is updated by the strategy period. There are practical actions for every division. The actions are collected to the *Ympäristövahti* tool, where responsibilities and schedules are shared. Monitoring of the progression of the roadmap goals is done with the tool. (Vantaa, 2022a). There is also supposed to be a public version of the tool in the future so that residents can follow the progress of the goals (Vantaa, 2021).

One goal of the strategy is to increase the sustainable ways of transport. Urban centres are also mentioned in the strategy, saying that in the centres it is easy to move by walking and cycling. (Vantaa, 2022a). In the *Resource Wise Roadmap,* there are multiple actions listed to achieve sustainability goals. There are goals to densify land use around the railways, create good conditions for sustainable mobility, and decrease the need to transport by creating diverse urban neighbourhoods with services. Services around the dense neighbourhoods, and supporting remote work will decrease driving by car, congestion, and the need for parking. Structured, concentrated parking is also mentioned in the roadmap. (Vantaa, 2022b). In the strategy, the investigation of a city-owned parking company is mentioned to have started in 2020 and be finished by 2025 (Vantaa, 2022a).

Covid-19 has affected mobility in Vantaa in recent years. The effects of Covid-19 show a decrease in public transport use and how car transport decreased between 2019 and 2020. However, in 2021 use of public transportation and parking spaces increased from 2020 and cycling decreased in the calculation points. In 2021 there were 110146 cars in use in Vantaa, which is 0,4% more than in 2020. (Vantaa, 2022c).

3.2 Vantaa parking principles and requirements

Car parking in Vantaa is provided mainly privately. Residents either own or rent parking spaces. Business, shopping centre and other service parking are located on the premises yard or separate parking garage. The city of Vantaa uses "parking norm", meaning parking standards that basically mean parking minimums. The standard varies depending on the property type and area

location. On-street parking is mainly meant for short-time visitor parking and running errands. (Vantaa, 2022).

The Vantaa 2020 masterplan proposal defines parking goals for different urban areas that fit into the surrounding land uses. In dense residential areas, it is emphasized that effective parking solutions should be used. In practice, this means a multistorey car park. (Ramboll, WSP, Vantaa, 2020).

Vantaa has guided parking for years through standards and the latest one is from the year 2018. The 2018 standard guideline states that it is more goal-oriented and directive than the earlier standards from 2011. The goal of the residential parking standards from 2018 was to densify city structure and help to achieve a quality environment and reasonably priced housing. Also, urban development focus around public transportation and services that decrease the need to own or use a car. The standard encourages concentrated and unnamed parking solutions to get the parking spaces in effective use, so the parking garages' size and costs decrease. (Vantaa, 2018).

3.2.1 Development of parking in Vantaa 2020 – 2025 report

In 2019 *Development of parking in Vantaa 2020 – 2025* was made. The report aims to form a parking policy for the city of Vantaa. However, this document is a draft that has not yet been approved by a political decision.

Development of parking in Vantaa 2020 – 2025 report consists of nine parts that are:

1. Time limits, parking subject to a charge, and traffic warden
2. Park and ride
3. Maintenance and heavy traffic
4. Shared cars and electric cars
5. Car parking standards
6. City-owned parking company
7. Bike parking
8. Proposals for parking challenges
9. The future of parking.

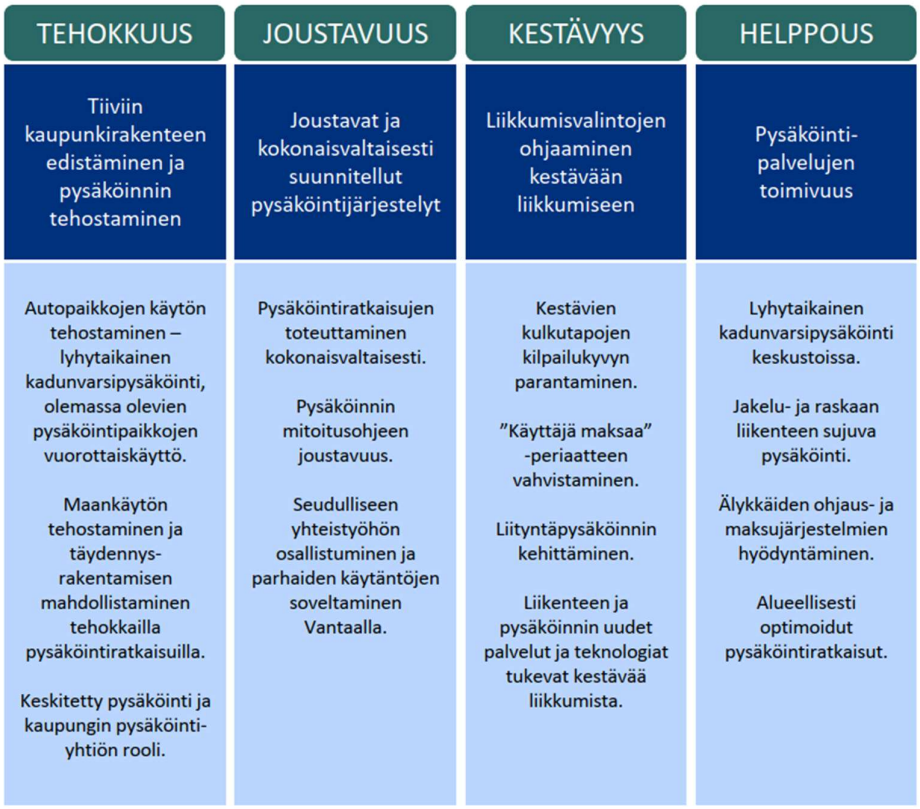
3.2.2 Parking goals

The Development of parking in Vantaa report describes parking policy goals that are:

- **Efficiency:** Promotion of compact city structure and more efficient parking.

    - More efficient use of parking spaces: short time on-street parking, sharing existing parking spaces.
    - More efficient land use and making infill construction possible by more efficient parking.
    - Concentrated parking and the role of the city-owned parking company.
- **Flexibility:** Flexible and comprehensibly planned parking.
    - Parking implementation comprehensibly.
    - Flexibility of parking design guidelines.
    - Participation in regional collaboration and application of the best practices in Vantaa.
- **Sustainability:** Guiding mobility choices towards sustainable mobility.
    - Improving the competitiveness of sustainable mobility.
    - Strengthening the "user pays" -principle.
    - Developing park-and-ride.
    - New technologies and services in transportation and parking support sustainable mobility.
- **Facility/easiness:** Functionality of parking services.
    - Short time on-street parking in centres.
    - Fluent parking for distribution and heavy traffic.
    - Utilizing smart guidance- and payment systems.
    - Optimized parking solutions for an area. (Ramboll, WSP, Vantaa, 2020).

Parking policy goals are presented in picture 2 in Finnish.



Picture 2. Parking goals of Vantaa (Ramboll, WSP, Vantaa, 2020).

When forming the parking policy goals there were strategic documents utilized:

- Vantaa town councils' strategy 2018-2021 and programs that implement the strategy such as Resource Wise Roadmap,
- Architecture program of Vantaa,
- Carbon neutral Vantaa 2030,
- Master plan draft 2020,
- Transport policy of Vantaa, and
- Mal 2019 plan. (Ramboll, WSP, Vantaa, 2020).

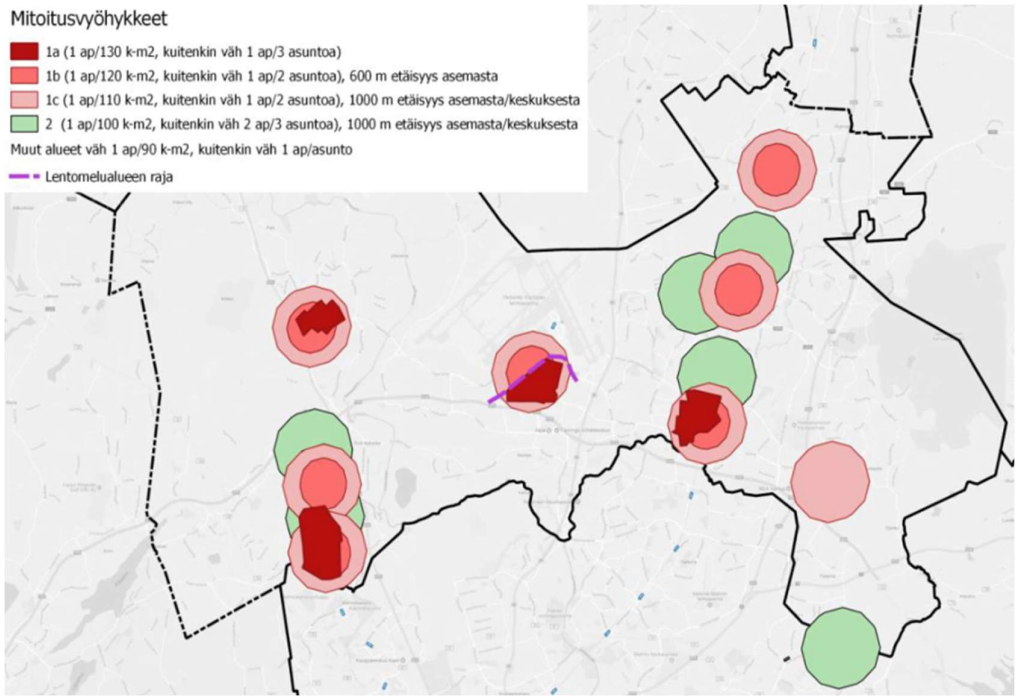
3.2.3 Parking standards

Parking standards for residential areas were updated in 2018. Different parking standards were connected to the nature of the area, which means that parking standards are the most lenient in compact urban areas, such as Kivistö. Lenient meaning that there are fewer car parking spaces required. The standard is connected to the proximity of a railway station, which means that the closer the station is, the fewer car spaces are required. The guideline for parking standards is now being evaluated again. It is possible to differ from

this standard if there is shared parking and parking are concentrated. (Ramboll, WSP, Vantaa, 2020).

The standard for residential areas in Vantaa is illustrated in picture 3:

- The 1a in the darkest red means one parking space per 130 GFA but at least one parking space per three apartments, so the least amount of parking.
- 1b in the lighter red means one parking space per 120 GFA but at least one parking space per two apartments, 600 meters from a railway station.
- The lightest red is 1c, which means one parking space per 110 GFA but at least one parking space per two apartments, 1000 meters from a railway station or urban centre.
- The green areas mean one parking space per 100 GFA but at least two parking spaces per three apartments, 1000 meters from a railway station or urban centre.
- In other areas there should be one parking space per 90 GFA, however at least one parking space per apartment. (Ramboll, WSP, Vantaa, 2020).



Picture 3. Car parking standards for residential buildings in Vantaa (Ramboll, WSP, Vantaa, 2020).

Development needs for car parking standards mentioned in the document:

- Residential parking will be site-focused also hereafter, so determining the right amount of parking,
- determining the right amount of parking around developing areas around public transport,
- encouragement of unnamed, shared parking,
- ensuring enough parking in the preliminary plan. (Ramboll, WSP, Vantaa, 2020).

For business and office buildings parking standards are determined in a guideline from 2015 for Helsinki, Espoo, and Vantaa. Only the minimums, not the maximums are in use from the guideline in Vantaa. (Trafix, 2015).

3.2.4 Parking time limitations

On-street parking in residential areas is limited by time except for detached housing areas. In central urban areas on-street parking is subject to a charge and time limitations are shorter, varying from 5 minutes to 4 hours. Denser residential areas do not have parking subject to a charge, but parking is limited by time restrictions during the week. In detached house areas, there are no parking subject to a charge and time restrictions only occasionally. On-street parking is only permitted on feeder roads, streets near shops and services, and local streets. For workplace, industry, and other areas there is no parking subject to a charge per se. (Ramboll, WSP, Vantaa, 2020).

3.2.5 Parking fee zones

Parking subject to a charge has been in use in Vantaa since 2018 in the centres of Tikkurila, Myyrmäki and Kivistö. Parking is subject to a charge during the week from 7 am to 7 pm and on Saturdays from 9 am to 3 pm. The first hour is free of charge and after that parking is either 1 euro per hour or 2 euro per hour. Methods of paying are parking disc for the first free hour, mobile apps, calling service and six parking ticket machines. There are no discounts for the charges. (Ramboll, WSP, Vantaa, 2020).

The *Development of parking in Vantaa* report suggested changes to the parking subject to a charge, shortening the free parking time to 30 minutes and expansion of the current car parking fee zones. Free first-hour parking is exceptional and not in use anywhere else in Finland. Shortening the free parking time would increase rotation, make finding a space easier and equalize the price difference between on-street and garage parking. From the point of view of the traffic warden, the free parking time and using parking disc as a payment method are nonfunctional. (Ramboll, WSP, Vantaa, 2020). After

the report, a decision was made about the fees of parking, where the car parking fee zones were decided to be expanded, and park-and-ride was made subject to a charge in some areas (Vantaa, 2020). Park-and-ride with a valid public transport ticket is either free of charge or costs a few euros (HSL, 2022). Park-and-ride is subject to a one-euro charge on top of the public transportation ticket in Vantaankoski, Martinlaakso, Louhela, Myyrmäki and Tikkurila (Vantaa, 2020).

3.2.6 Survey results from Development of parking in Vantaa report

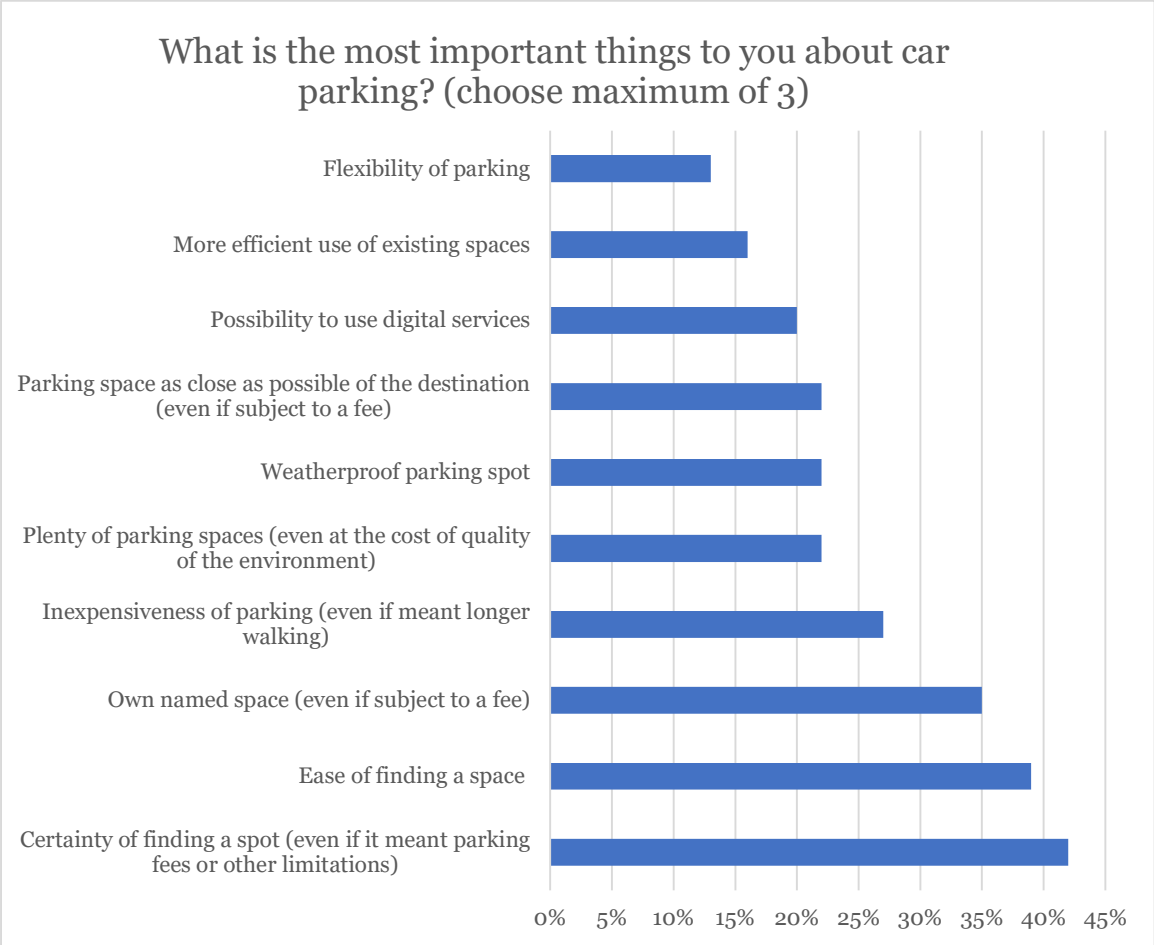
One part of the *Development of parking in Vantaa 2020 – 2025* report (Ramboll, WSP, Vantaa, 2020) was a survey for residents about parking in Vantaa that was made in March 2020. 26% of the respondents said to live in Kivistö. There were 636 respondents.

The questionnaire was a Maptionnaire survey that was shared on the social media and newsletter of the city of Vantaa. The goal was to get information about challenges in parking for the *Development of parking in Vantaa* report. The questionnaire concluded six parts; background information, car parking, bike parking, important things about parking, claims about parking and development of parking.

Over 90% of the respondents owned a car and used it actively, over 60% daily. Over 70% were unhappy with the parking conditions in Vantaa. Most of the respondents, 84%, park at home in a nominated space that they own or rent. Also 56% park at work in a space that the employer provides. (Vantaa, 2021).

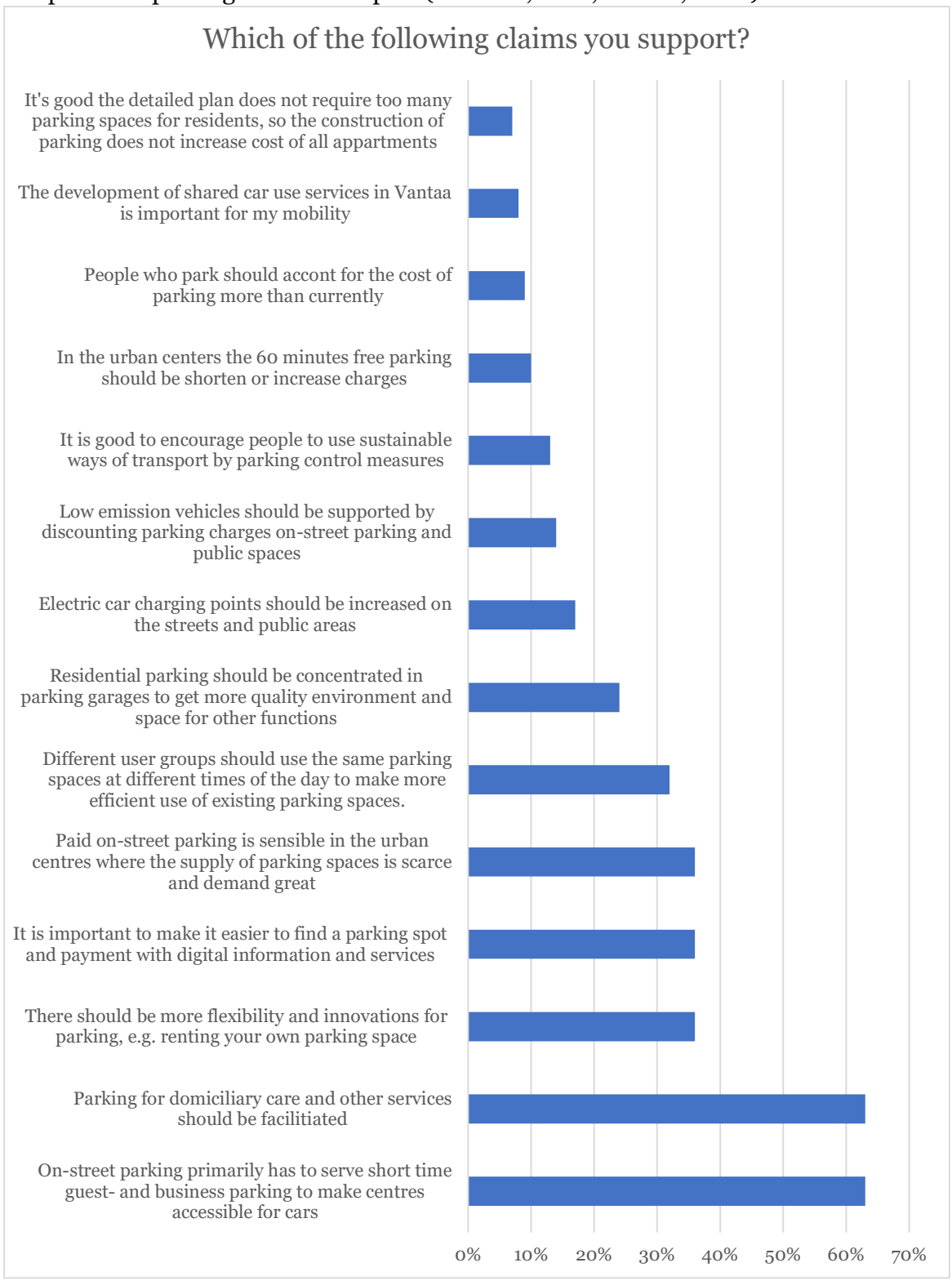
In the 'important things about parking' part, the respondent had to choose up to three most important things about car parking from the given topics. The results are presented in table 2. The most important thing about private car parking for the respondents was the certainty of finding a parking space and ease, even if it meant that parking was subject to a charge. (Ramboll, WSP, Vantaa, 2020). The responses show, that there could be a market for parking subject to a charge, since certainty and ease of finding a car parking space, or owning one, even when subject to a charge were the most answered options.

Table 2. The most important things about parking in Vantaa translated into English from the Development of parking in Vantaa report (Ramboll, WSP, Vantaa, 2020).



In the 'claims about parking' respondents had to choose which claims they supported. The results are presented in table 3. On average respondents gave their support to 3,9 claims. Most support got on-street parking for short-time parking such as running errands and for home care. The claim 'people who park have to account for the real cost of parking more than currently' got the least support. (Ramboll, WSP, Vantaa, 2020).

Table 3. Claims about parking, translated from Finnish to English from Development of parking in Vantaa report (Ramboll, WSP, Vantaa, 2020).



In open answers, the view that if you live in Vantaa, a car is a necessity and should not be made more difficult was emphasized. Respondent wanted more parking spaces, that parking should be included in the housing and on-street parking should be reserved for guest parking. (Ramboll, WSP, Vantaa, 2020).

Parking fees in the responses did not get much support, but at the same time centres should be accessible by car and finding a car parking space easy. These wants are contradictory since parking fees would help manage the demand and finding a car parking space more plausible (Shoup D. , 1999).

The respondents in web surveys, like the Maptionnaire survey in the *Development of parking in Vantaa*, choose if to answer the survey or not. This self-selection leads to a lack of representativity, and the results are biased. (Bethlehem, 2008). This means that people who were already interested in parking-related issues, were more probable to answer the survey, than people who were not interested in the topic and this affects the results.

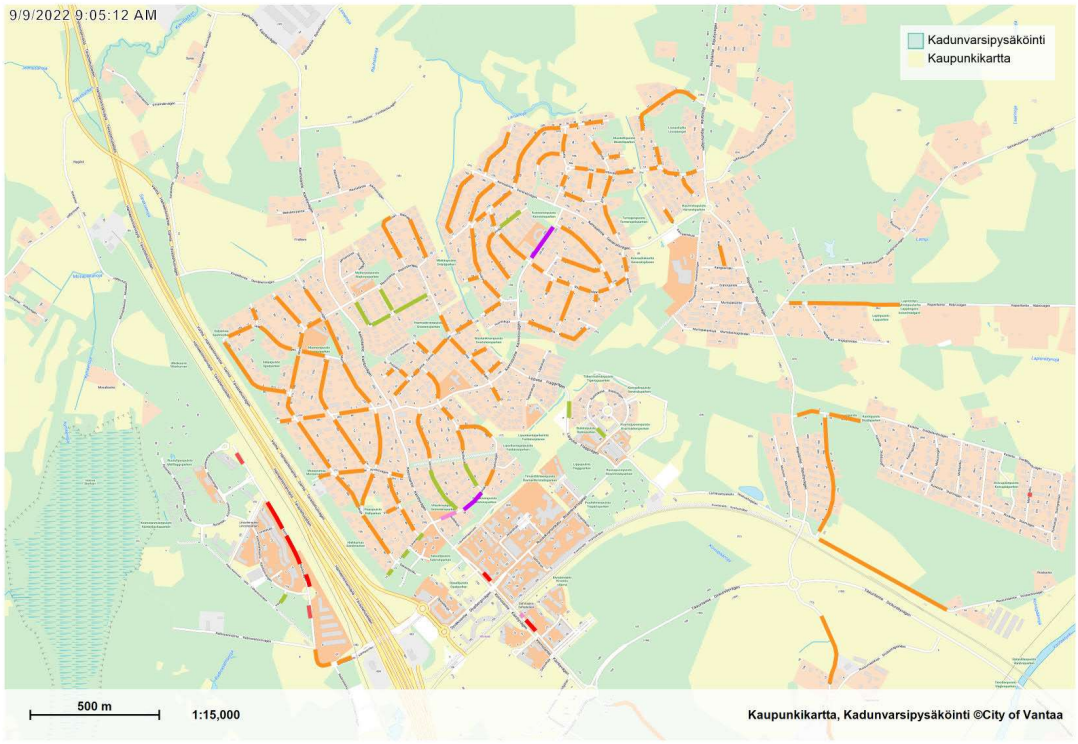
3.3 Parking in Kivistö

Kivistö is the largest major district by area in Vantaa and its centre is the Kivistö centre. The whole major district has about 16,900 inhabitants and half of the population lives in the centre. (Kivistön suuralue, n.d.). In the Kivistö vision, it is stated that in 2050 there would be 45 000 inhabitants living 1 kilometre from the stations: Kivistö and Lapinkylä (Kivistön visio ja kaavarunko, 2022). Kivistö centre is being developed around the Kivistö railway station of the Ring Rail Line and will be extended towards Lapinkylä station which is planned to be built on the Ring Rail Line east from the Kivistö station. The Hämeenlinna freeway splits in lengthwise and Ring Road III runs along its Southern border. Kivistö is a new urban centre that develops quickly. (Kivistön suuralue, n.d.).

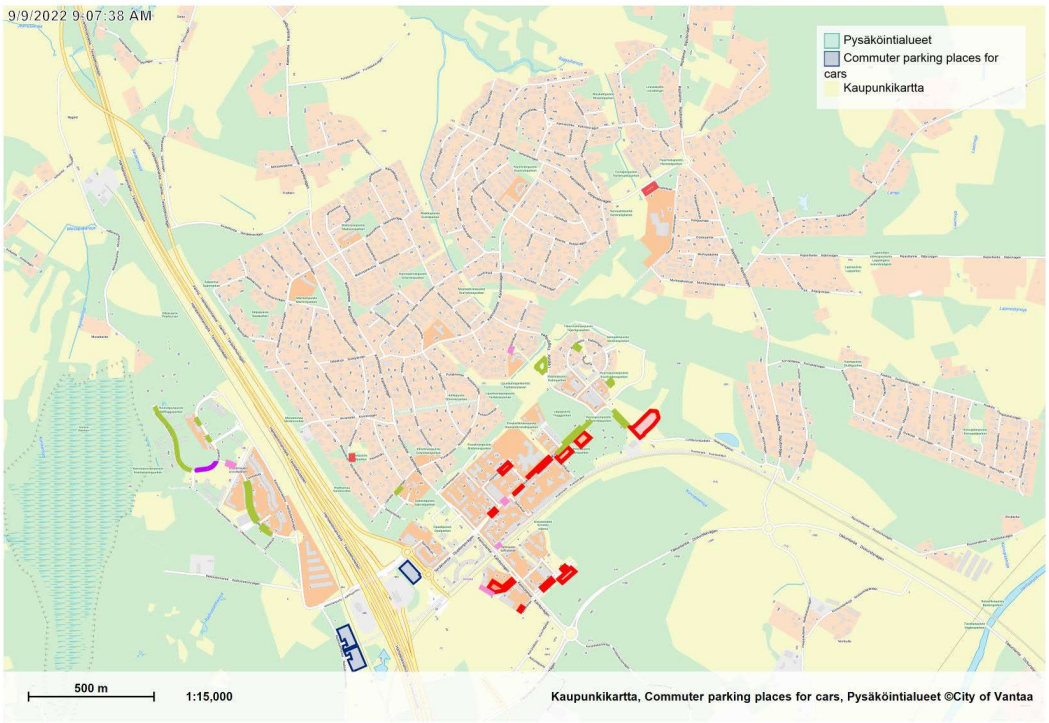
The key starting point for the strategic plan of Kivistö is climate change mitigation and adaptation to it, and the city of Vantaa's goal of being carbon neutral by 2030. Compact and mixed city structure decreases the transport emissions of residents. Parking is concentrated in garages and short time parking is on the streets. The vision paints a picture of a future where private car use has decreased in Kivistö and most transportation will be through walking, cycling, public transport, or shared cars. (Kivistön visio ja kaavarunko, 2022).

3.3.1 General about parking in Kivistö

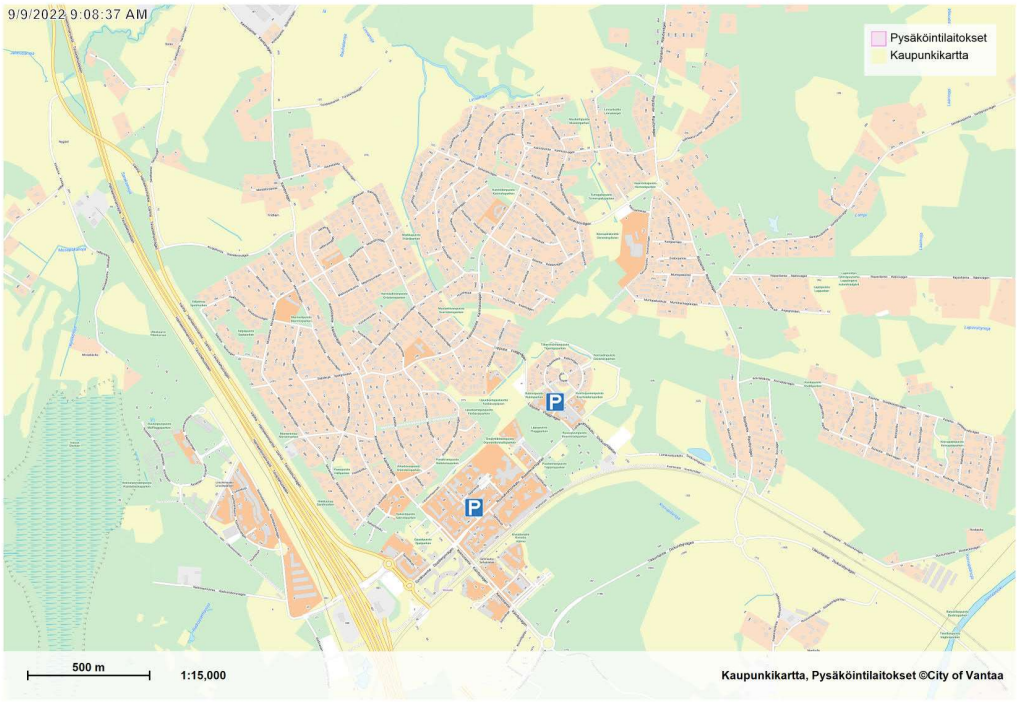
The current situation of parking in the centre of Kivistö is that city of Vantaa gets feedback from the residents of Kivistö that parking is insufficient. In the *Development of parking in Vantaa* report, it was stated that parking challenges are emerging especially in new developing areas where are the least amount of parking according to the standard, one parking space per 130 gross floor area (GFA). The guideline for the least amount of parking spaces includes neighbourhoods located near a railway station. The services that were one condition for the decrease of parking spaces have not been actualized in the areas. The lack of services increases the need to use a private car according to the report. (Ramboll, WSP, Vantaa, 2020). This is the case in Kivistö. The location of the Kivistö centre, being further away from other urban structures of Vantaa, also adds another challenge to car parking. The on-street parking spaces are presented in picture 4. In picture 5, the on-street parking areas and park-and-ride are presented. In pictures 4 and 5 the orange colour means that there are no time limits, the green is for a maximum of four hours, purple is for a maximum of two hours, pink is for a maximum of 30 minutes of parking and red is subject to a charge. In picture 5, blue areas represent the park-and-ride car parking areas. Lastly, in picture 6 off-street parking garages are presented.



Picture 4. On-street parking spaces in Kivistö (Vantaa, 2022d).



Picture 5. Parking areas and park-and-ride in Kivistö (Vantaa, 2022d).



Picture 6. Parking garages in Kivistö (Vantaa, 2022d).

Parking lasts usually at most one hour in the parking subject to a charge. In the year 2019, about 60% used parking disc as a payment method and 40% an app or a parking ticket machine. With an app or bought from a parking ticket machine about half of the parking was under an hour and thus free of charge. Therefore only 20% pay for parking. In Kivistö there are repetitive parking and parking spaces are mostly used by residents. There are about 12,8 parking activities per space per month. In 2019 the utilization rate was at its highest at 77%. (Ramboll, WSP, Vantaa, 2020).

3.3.2 Temporary residential parking

The city has tried to solve the problem by providing parking in areas that are empty now but will be developed in the coming years. These areas have been used for the barracks of the nearby construction site workers. Car parking in these areas costs 50 euros per month or 5 euros per day. This car parking trial has been temporary since October 2021 and has been very popular. When the areas are being built and cannot be used for parking anymore, parking from these areas will move to another place on the edge of Kivistö. These temporary residential car parking are supposed to be in use until there are all the concentrated parking garages in use in 2050. The areas for temporary car parking are presented in picture 7.

Picture 7. Areas that are used for temporary parking in 2022 (Vantaa, 2022d).

3.3.3 Parking challenges and proposed solutions

Parking challenges that were recognized in the *Development of parking in Vantaa* report that concern Kivistö were that the area is new and there is not enough parking for residents, visitors, and businesses. The new standard decreases the number of parking spaces compared to the need. One reason for the higher amount of car ownership than planned in the area is because of the lack of services. There's little on-street parking that is meant for short-time parking. Residents are using these short-time parking spaces and taking the spaces from visitors. The residential parking also spreads to the detached housing area. The temporary parking areas are popular but at the same time, the parking garages are partly underutilized. People who move to the neighbourhood are not aware of the parking standards of the area. (Ramboll, WSP, Vantaa, 2020).

The parking garages, where it was planned all residential parking would concentrate, are not used to their full capacity. The idea behind the parking garages was that when you buy an apartment or a house in Kivistö, you also buy a parking space from the garage. However, most of the residents are renting an apartment and the investor who bought the apartment did not buy a parking space, and people who are renting are not willing to buy a parking space.

Residential parking moves from garages to the street. (Ramboll, WSP, Vantaa, 2020)

Proposed solutions for these challenges are:

- increasing the amount of on-street parking,
- using unbuilt sites for temporary parking,
- ensuring more parking for new development,
- on-street parking next to business premises,
- reviewing on-street parking time limits,
- expanding the parking fee zones,
- residential parking permit,
- shared parking for city premises (e.g., schools, daycares),
- development of services and public transport,
- informing and communicating with the residents about the parking goals and options, also before moving to the area
- increasing co-operation between transport planning and construction supervision
- experimentation with peer rental service, where a resident could rent a parking space when they do not need it. (Ramboll, WSP, Vantaa, 2020).

3.3.4 Media analysis about parking in Kivistö

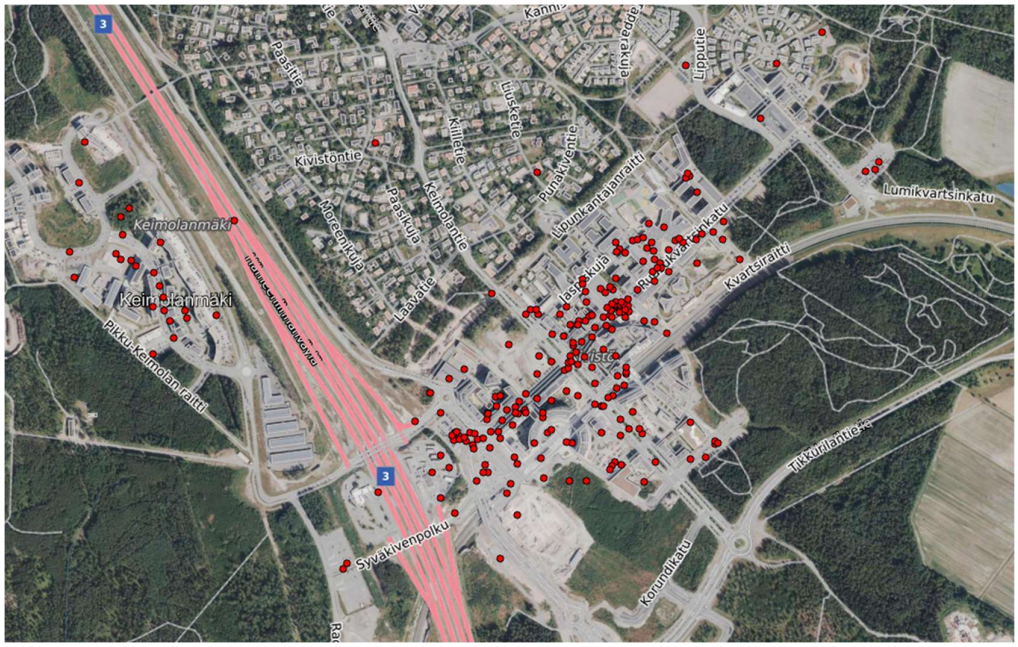
To get a general picture of the public's opinion about parking in Kivistö a brief media analysis was done. A media analysis was done by searching 'Kivistö' from news media Vantaan Sanomat, Yle, and Helsingin Sanomat from the years 2015 - 2022. 2015 was chosen as the earliest year to search about Kivistö because it is the year when the railway line that stops in Kivistö, was opened. Then the search hits were manually reviewed that which articles of them discuss parking.

There were eight news articles in 2021, 11 in 2020, eight in 2019, two in 2018, four in 2017, one in 2016 and none in 2022 and 2015. Altogether 34 articles discuss parking in Kivistö. 25 of them were articles in Vantaan Sanomat, 3 in Yle and 6 in Helsingin Sanomat.

The articles were categorized into negative, positive, and neutral by their headings and content. The most mentioned topics were lack of parking spaces, lack of services, and cost of parking. 17 of the articles could be seen as negative, 14 as neutral, and 3 as positive. The general view that you get from the articles on parking in Kivistö is, that there is a parking problem in Kivistö, the city struggles to find a solution, and that residents suffer from a lack of parking and services.

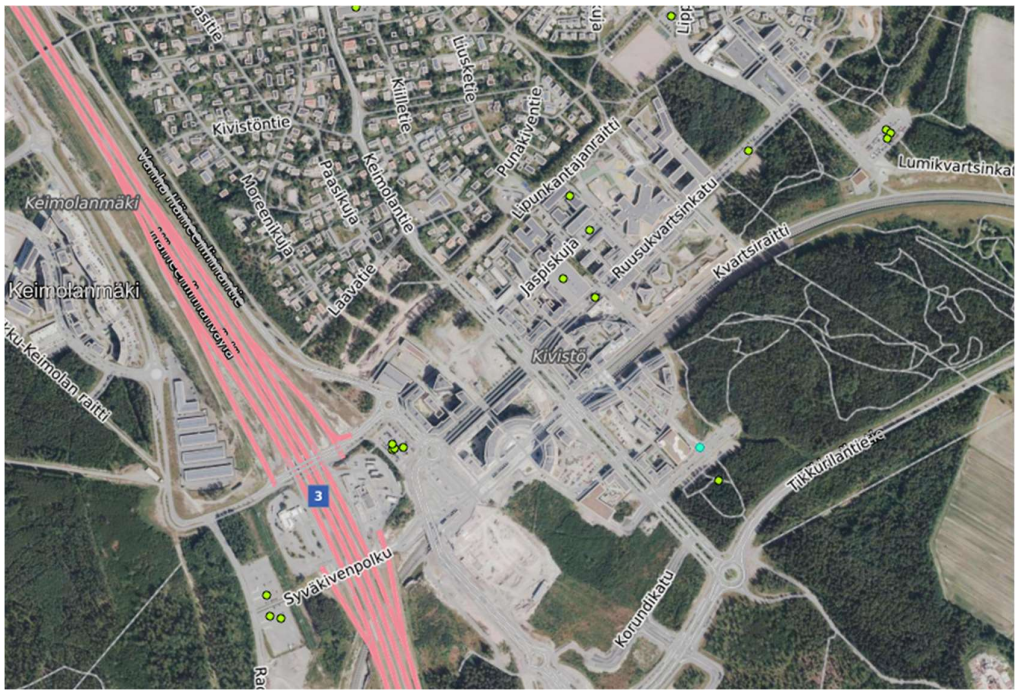
3.3.5 Residential feedback

In the *Development of Vantaa parking* report survey residents of Kivistö marked places on a map where they were satisfied or dissatisfied with parking. Picture 8 presents the places where residents are not satisfied with parking. Generally, residents' view was that there were not enough parking spaces, location and lack of services required car use and on-street parking time limits are too strict and there is not enough on-street parking for visitors.



Picture 8. Places where are parking problems according to the residents in 2020 (Ramboll, WSP, Vantaa, 2020).

The places where parking was thought to work well, were usually parking garages, where are no strict time limits and abundance of space. Picture 9 presents the places where parking was thought to work well. Residents gave good feedback especially when car parking spaces were easy to find and when there were many free spaces.



Picture 9. Places where parking works well, marked by the residents in 2020 (Ramboll, WSP, Vantaa, 2020).

4 Research material and methods

4.1 Focus groups as a method

Focus groups are qualitative research technique based on in-depth discussions of a particular topic. Focus group discussions can be task-oriented, informal talk or cautiously planned series of discussions. Focus groups try to obtain perceptions on a defined area of interest in a socially interactive way and encourage homogeneous participants to share different points of view without the necessity for consensus. (Krueger & Casey, 2000).

Usually, a focus group contains two core elements which are a facilitator who plans the focus group with prepared questions and the goal of uncovering participants' feelings, attitudes, and understanding about a selected topic (Puchta & Potter, 2004). The objective of a focus group method is to gather information and listen. Participants are selected for a certain characteristic that they have in common that relates to the topic of the focus group. To encourage participants to share perceptions and points of view, without the need to reach a consensus, the researcher creates a permissive environment. The focus group discussions are conducted several times with similar types of participants to identify trends and patterns. Analysis of the discussions can provide insights into how the issue is perceived. (Krueger & Casey, 2000).

The strengths of focus groups arise from the views that come up during the interaction among the participants. These discussions can clarify not only what participants think but also reasons why they think the way they do. As participants share and compare their experiences, they are naturally interested in the ways they are similar or different. This dynamic is valuable since it shows the extent of consensus and diversity within the group and on top of that provides information about the sources of those similarities and differences. (Morgan, 2019).

Focus group as a method has limitations. Focus group questions are not asked the same way each time, responses are not independent, and conclusions are dependent on the analyst's interpretation, the analyst can influence the results, and the result is difficult to quantify. Focus groups have been criticized for sample size and participant selection process. (Fern, 2001) Focus groups do not have the depth than individual interviews and create less detailed information about each person than an individual interview. One constant factor in focus groups is having to balance between the researcher's objectives and the participants' interests because even though the researcher selects the topic and guides the conversation, the group members are the

ones who generate the data and can deviate from the discussion (Morgan, 2019).

4.2 Reasons for choosing focus groups

It is important to study policy tools because policy tools are connected to path dependency. It means that when a policy procedure or tool is once used, there is an increased probability that it will be repeated in future policy-making processes. (Stead, 2021). Car-dominated built environment is one result of path dependency and dismantling it also requires dismantling policy procedures.

Decision-making is a part of planning and even though there are multiple guidelines for planning, and to help the decision-making process, there is still individual interpretation that affects the decision-making process. The qualitative expert interviews aimed to map out the experts' mindsets about parking to evaluate the efficiency of parking policy and implementation. To assess parking policies, a qualitative focus group method was chosen.

Also, there are already some quantitative data collected by the city of Vantaa on parking, some of it presented in chapter 3, so qualitative data felt appropriate to support the data collected and deepen the information about parking.

4.3 Implementation of the focus group interviews

The focus groups were organized around structured questions focusing on three themes that were:

1. vision/strategy,
2. policies, and
3. actors and process.

The interview protocol is presented more in-depth in Appendix 1. The discussion followed the topics that the interviewees wanted to discuss about, so other issues were also possible to bring up.

The participants were chosen from the city of Vantaa urban environment division. They were purposely chosen from different teams to get representation from different professions and interests, while still having a professional connection to parking. In total there were 17 participants. Participants included detailed planners, master planners, transport planners, street design planners, employees from the building permit unit, and employees from the properties and holdings unit.

Focus groups were carried out in Microsoft Teams. The interviews lasted between an hour to an hour and a half. The sessions were recorded, and an automatic transcription was done through Teams. Since the automatic transcription was not fully correct, it was manually reviewed with the recording after the focus group session. On top of correcting the automatic transcript, editing the transcripts included making sentences more fluent by removing repeated and filler words. The corrected and edited transcripts were then put to Atlas.ti, which was used to code the transcripts. Coding was done manually by going through the transcripts and coding every time a certain topic was mentioned, e.g., every time standards were mentioned, the sentence or paragraph was marked with *standards*. After the first round of coding, the codes were reviewed, and codes with similar meanings were merged to decrease the number of codes.

The codes were then put into six categories. The six categories were formed based on the bigger themes that influence parking policy processes. These categories were:

1. Mobility culture,
2. Behaviour,
3. Built environment,
4. Urban policy,
5. Planning organization, and
6. Politics.

There was also a category *overarching*, where codes that did not belong to any of these main categories were put.

One limitation of focus groups is the analyst's influence, so it is important to also mention the researcher's biases about the topic. The researcher does not have a driving license, so will probably favour other modes since she does not drive a car. On top of the fact that she cannot drive, her opinion about cars and their effect on climate and urban structure has been negative before this work.

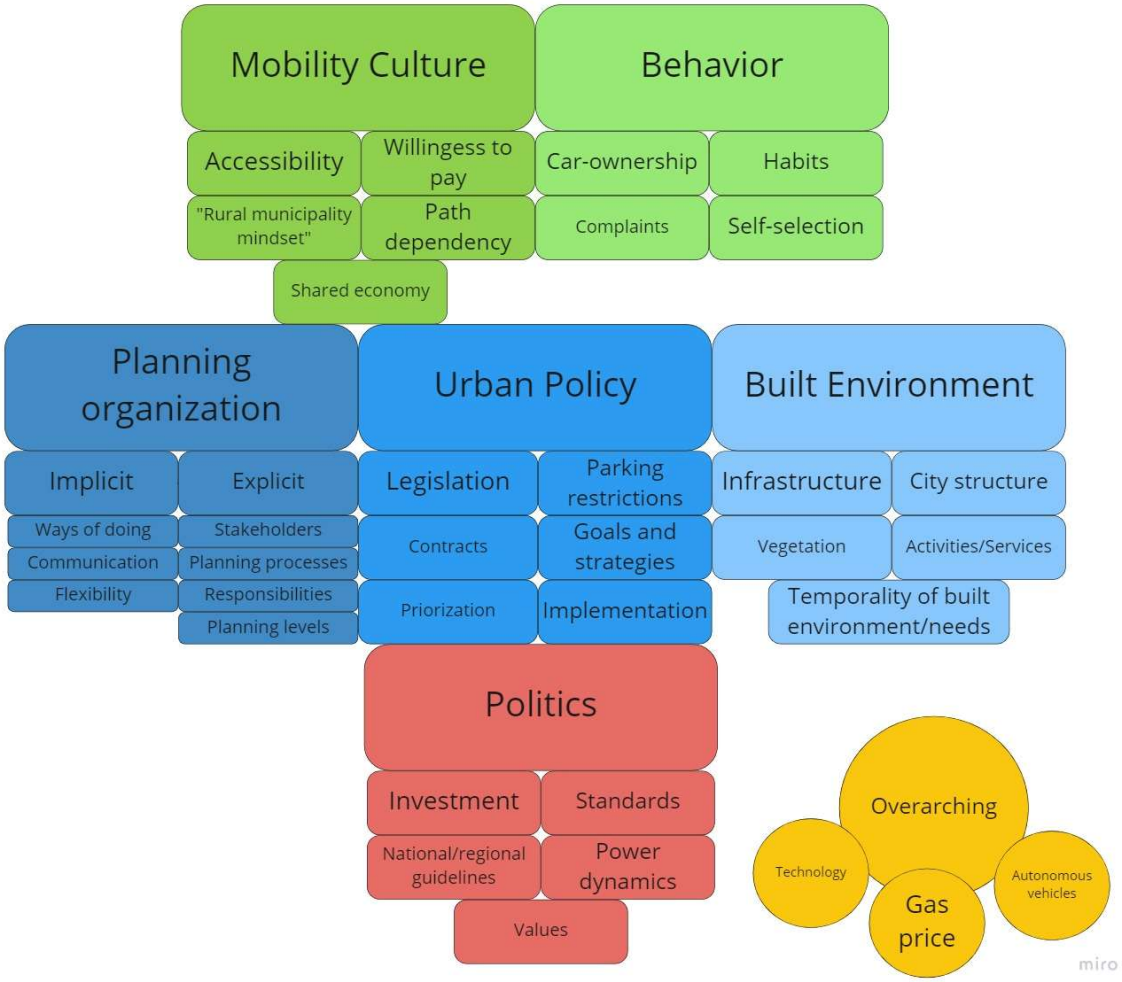
5 Results

5.1 Focus group interviews

In this chapter results from the focus group interviews will be presented. In this chapter the research questions presented earlier will be answered, focusing on the mindsets and attitudes towards parking. Quotes of interviewees were translated from Finnish to English. Quotes are also modified to be more coherent by removing repeated and filler words.

After coding the interviews in ATLAS.ti the most mentioned topics were cost, amount of parking, communication, standards, accessibility, car ownership, parking garages, and urban structure.

The codes of the interviews were categorized in themes that are presented in picture 10. 'Mobility culture' includes the attitudes and current practices that rely on a certain type of thinking regarding parking. 'Behaviour' includes habits that were mentioned to be done or assumptions from the interviewees about activities done by residents. 'Built environment' included codes of the infrastructure, vegetation, and activities in the built environment. 'Urban policy' included codes of mentioned measures and practices. 'Planning organization' includes mentioned and concluded implicit and explicit features of the planning organization. 'Politics' include measures and activities that require political decision-making or things that effect politics. In the 'extra' category there are things that were mentioned but do not go into any categories mentioned.



Picture 10. Categories of factors recognized from focus groups.

5.1.1 Mobility culture

There were discussions about unlearning what parking has been until now and that it requires time. Some participants think that complaints from residents about the matter are part of that unlearning process. Some interviewees also think that Vantaa is 'young' as an urban city and Kivistö newborn as a neighbourhood, so getting used to urban parking solutions takes time. Here the underlying assumption is that people moving to Kivistö might not be people who are used to urban parking solutions. One participant also called the mindsets in Vantaa towards parking as "rural municipality mindset", meaning that mobility that relies on something else than automobility is not prominent. One participant thinks that it is problematic if only one unit gets the complaints and because of the complaints thinks that abundant parking spaces should be provided.

Many interviewees talked that there's not necessarily a lack of parking spaces, but a lack of free-of-charge parking spaces.

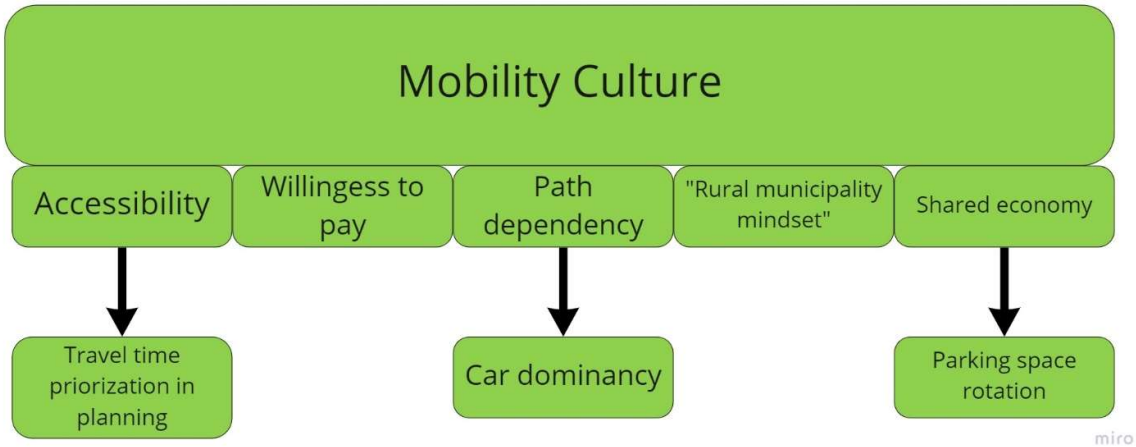
Participant 5.2.: "We have been taught that parking is free. To unlearn that takes a couple of generations. The next generations will think it is natural to pay for parking."

Some participants said that parking and driving are one part of the mobility opportunities. However, the question remains whether this means that driving should be equal to other modes or should other modes be favoured over driving.

Participant 3.3.:" We don't only discipline driving but also make other modes possible. There are still children and elderly people who don't drive, so it would be nice that they have the same services and possibilities in life that drivers have access to and that it won't take 3 or 4 times longer."

One interviewee points out, that often it seems that when people talk it sounds like driving is prohibited, however in reality almost all public space is accessible by car. When space is reserved for cars and parking, it takes space from other modes and therefore makes using other modes more difficult.

The topics and subtopics discussed in mobility culture in the interviews are presented in picture 11.



Picture 11. Mobility culture topics and subtopics.

5.1.2 Behaviour

Car ownership was one of the factors that participants considered to be important in parking politics. Comments about car ownership often included assumptions of activities that required a car, such as driving kids around, free time hobbies, and groceries. Transport planners said that *"car ownership describes how well the city is planned in a way that you manage without a car"* and that parking politics is the most important way to influence mode distribution. However, most interviewees stuck with the idea, that in day-to-day life (especially with kids and hobbies) car is a necessity.

Participant 6.2.:" Day-to-day pragmatics, when there are a lot of groceries, or if you have a hobby with a lot of equipment, then there could be loading area, or short time parking close by housing, so there would be a shorter distance to carry the groceries or equipment to home, than carrying stuff from the parking garage that is further away."

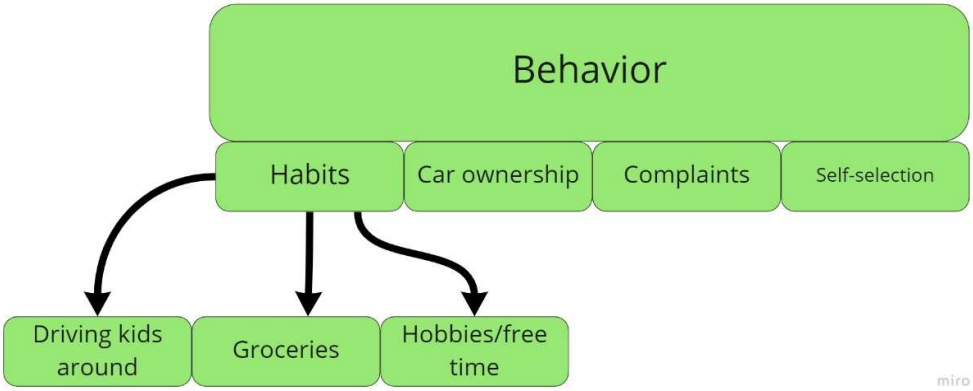
Habits were not mentioned straight very often, but it was underlying as when interviewees were talking about residents having to "get used to" something new. One interviewee talked about their own experience with habits:

Participant 4.3.: "I noticed about myself that when my bike's electric engine was in maintenance, I drove short distances by car because I couldn't be bothered to walk. I have also lived in Espoo, so maybe that is where this mindset comes from."

Some participants also talked about the importance of self-selection of living neighbourhoods in regard to parking. Self-selection means, that people choose their living area based on the lifestyle preference they have. The neighbourhood needs to provide possibilities and be attractive to those who want to live without a car. The neighbourhood that has good services will never be good enough for people who want to drive if there isn't parking.

Participant 5.3.:" I doubt that many people think about parking as a first criterion for where they want to live. But if you do not have any other option than an expensive parking space, then they vote with their feet. We constantly discuss about Kivistö that if you move to a suburb where is no urban structure for services, but you pay the same price for parking as in centres, it is valid to ask that what is the point."

The topics and subtopics discussed in the interviews about behaviour are presented in picture 12.



Picture 12. Behaviour topics and subtopics.

5.1.3 Built environment

There was a conversation about the contradiction between the accessibility of daycare or school locations and providing parking in the urban structure. One participant questions the current practice, where children are driven to a big facility, rather than the whole city structure would be safe and dense in a way, that it would be preferred for the parents to walk together with the child to daycare.

There are also contradicting wishes for the daycares and schools' sizes and locations. One of the participants said that there are complaints about daycares not being accessible but that it is difficult to find a big enough location which is also accessible in an urban environment. If the daycares would be smaller in size, they would also have a better location. These reasons already limit the sizes and locations for daycares and schools, but on top of them, parking spaces are also wanted within the property.

Participant 4.2.:" In every project, we have that discussion with the daycares and schools that how much they will lose yard when they want the parking spaces on the same lot, and they complain that the school lot is not 3 hectares in the middle of urban structure. And still, they want the parking spaces in the lot."

Some participants felt that the requirements for street design and maintenance vehicles are an obstacle for smaller-scale city structures. Maintenance vehicles are often the reason that defines the street width. Some participants questioned the size limitations as obstacles for narrower streets and so, a smaller scale urban environment in the future. It is acknowledged that since

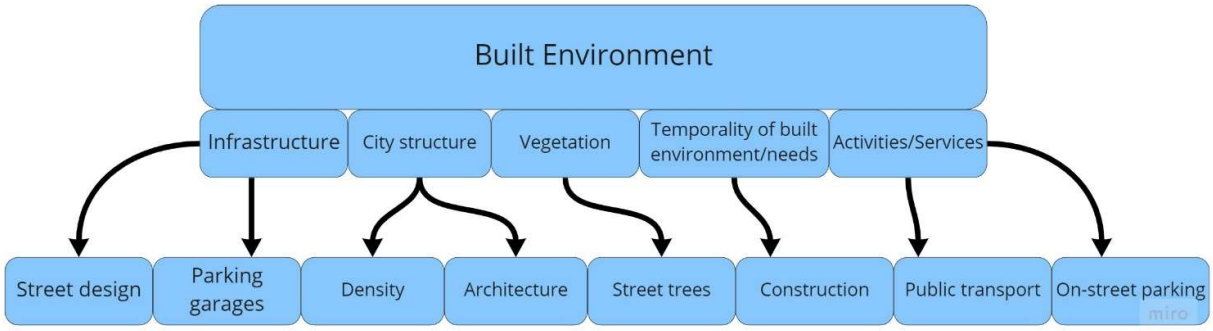
the vehicles are now a certain size, the maintenance unit does not want to use their budget to buy a smaller maintenance vehicle, but the size of a vehicle as a limitation for urban planning is questioned.

Participant 4.1.:" In planning, there are optimums for every sector and when every sector has its own optimums, then the result is everything but the optimum."

The physical size and appearance of parking garages were one topic. The size and appearance of the parking garages are easily something that does not fit into the scale of the other buildings. The scale and appearance are usually determined in planning ordinances. In one focus group, it was discussed that there is no decision by the city on how parking can be provided most aesthetically: is it the big, concentrated parking garages or decentralized on-street parking that would be smaller scale.

One point that few interviewees brought up was temporality or temporal needs, such as parking for construction workers. Some also thought that the need for parking is the highest when a neighbourhood is being built and is new, so there is a need for temporal parking solutions, such as the temporal parking areas now in Kivistö. However, these temporal solutions also rise a worry in other interviewees, that residents get used to it and when these temporal solutions are discontinued, there will be more problems and dissatisfaction about parking.

The topics and subtopics that are discussed in this chapter about the built environment are presented in picture 13.



Picture 13. Built environment topics and subtopics.

5.1.4 Urban policy

The lack of parking strategy

Many participants thought that a bigger-scale strategy is missing from parking planning in Vantaa. It was said many times in the different focus groups, that "this is a conversation we should/need to have within the city organization". One interviewee said that the parking solutions are thought of case by case in plans and the main strategic guide is parking standards. There are also cases where the amount of parking in a parking garage has determined the size of a plan, meaning that the plan must be a certain size that there can be a parking garage because every plan must show how parking is managed.

Participant 5.3.: "We have the standards that are area specific and guide how to apply them in planning, and meters and centimetres specified for parking spaces, but what is missing is the strategic level."

Standards

Some of the participants felt that holding on to the standard is too strict and there is no flexibility in planning.

Participant 4.4.: "I think it would be necessary to discuss what is the purpose of parking. I don't think it is that everyone who wants parking, will get a parking spot because then we are building a place that is founded on that everyone moves by car. However, if we build parking by the standard, then of course the easiest way of mobility is driving. "

Participant 4.4.: "You cannot discuss about standards; it is like a law. Rather than doing something proactive with parking. I feel like it is an impossible conversation. It feels like speaking different languages."
Comment from participant 4.3.: "There is absolutely no willingness to be flexible."

On the other hand, some interviewees said that too few parking spaces within the standard caused that there are not enough parking spaces built in the development. This will result to residential parking spilling into on-street parking that is meant for short-time parking. When residential parking spills to on-street, and there are complaints by entrepreneurs in the area and residents that there is not enough parking, more on-street parking built will be built afterwards. Sometimes if this is not acknowledged early enough, it will cause changes in already built streets and the removal of street vegetation. One participant thinks that this is something that has not been discussed within the city organization if it is acceptable to make changes in the physical

street structure because of parking. Also, in principle, these kinds of changes in already accepted street plans require another public inspection.

Participant 1.2.: "During the street design planning phase finding space for parking is not possible, because the space for the street is already determined in the earlier planning phases. During the street design phase finding space for parking means removal of vegetation or other activities from the street. There have been instances where more on-street parking has been wanted and then it practically means removing street trees because there is no other sensible alternative."

Opinions varied on how much parking should be provided between the focus groups. The most common opinion about the amount of parking was, that the supply should match demand. The detailed planning had the most differing opinion with having less supply to demand.

Participant 4.4.: "Planning is not a parking space vending machine for everyone that wants one."

Participant 6.1.:" At what point the area is urban enough that urban parking, such as concentrated parking in parking garages, is acceptable?"

There are no similar standards for on-street parking as there is for development such as apartments, business, or offices. There's no standard for some special development either, such as daycares. The on-street parking amount is estimated in a detailed plan and finally decided in the street plan. One of the participant's principles of on-street parking was, that "as long as there is some". For other development where's no standard, the amount of parking is decided on comparing earlier examples of similar plans.

<u>Price of parking</u>

The price of parking was a topic, where the interviewees had uncertainty and questions, especially considering the parking garages and city-owned parking company. Most agreed, that parking should be subject to a charge and that it should be more expensive than it is now in Vantaa. It was obvious that building a parking space and the willingness to pay for it, did not match.

Participant 6.1.:" In my opinion, free parking in centres is questionable because that land still has value. And of course, building that space, upkeep and everything cost something every year, and somebody pays for it and if it's on-street, then it is the city that pays for it and then it's money away from other things. It is reasonable that people who drive should pay for the

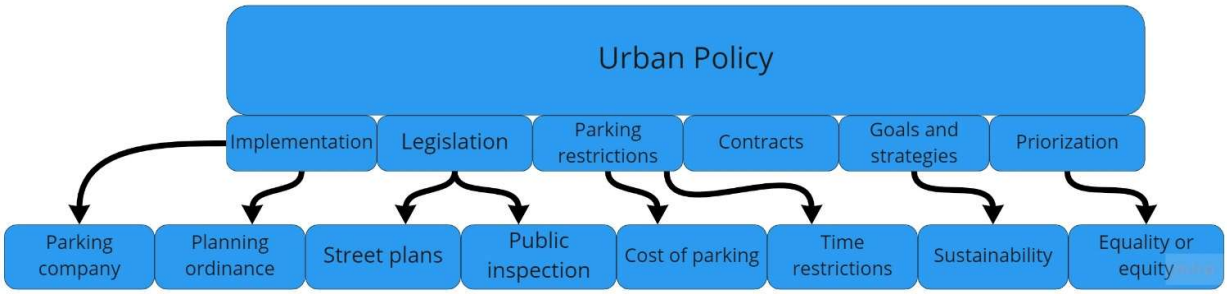
expenses. Driving is however subsidized in other things, so drivers do not pay all the expenses ever."

The costs of city-owned parking company were something that most of the participants thought to be expensive but at the same time, it was acknowledged that there is not enough information about it. There's also an opposing view of that there is enough information, there's just no courage from the planning organization to take the city-owned parking company matter to decision making. Unbundling of the parking spaces is something that is seemingly done in Aviapolis and Kivistö, meaning that residents need to buy or rent a parking space separately from the apartment, but what was uncertain was if it really shows in the prices of the apartments. One interviewee talks about how construction firms have told that the price of building a parking space does not correspond with the pricing of a parking space. Residents' willingness to pay for the parking space is not on that level that all parking spaces would be sold in a parking garage, so the price of parking is bundled with apartment prices.

Planning ordinances for garages

The multi-use of parking garages, meaning that there would be other activities within the parking garage building, is sometimes required in the plan. This evoked differences in opinions in the focus groups. The interviewees mentioned positive things about multi-use of parking garages, such as a more interesting street level façade, the possibility to have the garage as a meeting point for the residents and the possibility to have more vegetation in the urban structure. The interviewees mentioned also negative aspects of the multiuse of parking garages, such as vandalism, the higher quality of the technical properties of the building (e.g., air conditioning) and therefore more expensive building and managing costs. Vegetation on the garages' roofs was also something that a couple of interviewees mentioned. It is challenging to find vegetation that survives on the roofs, and that the concrete must be repaired anyways in 40 years. Also, what happens to the parking garages, if driving does decrease and there is no need for that much parking, was something some interviewees were thinking about.

The topics and subtopics discussed in this chapter about urban policy are presented in picture 14. Although standards are not a topic in urban policy in picture 14, since it is a decision that politicians make, it is discussed in this chapter because it is a major planning tool.



Picture 14. Urban policy topics and subtopics.

5.1.5 Planning organization

Purpose of planning

The goal of planning was seen differently between the focus groups, meaning whether the purpose of planning is to provide the residents the needs of today or guide towards bigger goals despite current trends. For example, some interviewees said that there are no signs of decreasing automobility, so there cannot be plans or detailed plans without parking. On the other hand, some interviewees saw that by decreasing parking amount in plans, the city guides towards other ways of transport and prepares for a future where automobility is not the primary way of moving around. Some think that providing parking spaces the amount of the standard encourages driving and that the standard could be more proactive and goal-directive in a way that the standard would instead encourage to give up driving and car ownership.

Participant 3.1:" It is easy for detailed planners to say that there won't be need for parking for long, that private cars will disappear, but there are no signs of that. If the frequency of private cars is not growing, it is at least staying the same."

Participant 1.1.: "The thought that when there are no parking spaces then there are no cars has not worked. People still have cars more than there are parking spaces."

In the case of Kivistö however, some think that the standard with fewer parking spaces has failed, and it has resulted in problems and dissatisfaction among the residents, especially when combined with the lack of services and the fact that Kivistö is a relatively new area. One participant thinks that it has been made "impossible" to own a car in Kivistö and that planning parking

spaces like this is “closing our eyes for years and it will cause a lot of problems”.

Some participants felt that differences in perception of time between the units might be part of the reason for these differences seen in planning. For example, some participants felt that the minimum standard does not prepare for the future while holding on to it is important for others.

Participant 4.4.: “The standard is clumsy because someone just gives you an amount for parking for a plan and you have to fight for a smaller number for example around a future railway station. The standard does not look into the future at all, only that what is the need now, when there is no railway station yet.”

Presenting the idea of a city-owned parking company to politicians

A couple of participants mentioned when discussing the city-owned parking company, that it has been on the planning table for many years, even decades. When asked why that is, participants give reasons from bureaucracy, lack of courage to take the matter into decision making, and that it is difficult politically. Also, one participant points out, that even when taking the matter to present to politicians, it is just the first decision on a series of decisions that need to be made and that presenting it does not mean that it will happen. It is a big schematic question if the city wants to be involved in the parking business, but as one of the participant comments, the city is already involved in it.

Participant 4.1.: ”Maybe it gets stuck in the bureaucracy or something. I don’t know how much of it is mental laziness and how much of it is that it might be quite difficult also politically. It would mean that city must put millions into it and build parking garages and it takes a while before getting money out of it. Maybe it gets stuck in the end because Vantaa has the rural municipality mindset.”

One participant points out, that when the parking is provided by garages that are administrated by a company, it is administratively more burdensome than standards.

Communication

There is uncertainty among the participants that how much other units talk with each other. The units have a clear understanding that what are the functions and tasks of other units. However, the communication between different units is unclear.

Participant 1.1:" Now we get emails from transportation planning that this is how it should be done, and I don't know if they have discussed it with detailed planning or just done it themselves. But I would like that there is a more extensive conversation before removing trees."

When discussing an example from one unit from detailed planning, a participant from another unit in detailed planning said that it has not been possible in their unit and said that this is the reason why cross-sectoral conversations would be important.

Participant 4.2.:" I have noticed that it matters a lot whom you are negotiating with because sometimes it feels that what is okay in another unit is not okay in another. It would be nice that it goes the same way everywhere within the city organization."

There were also underlying examples where it was obvious that there was no understanding between the people. There was the example of an experience where the coworkers were "speaking a different language", that a coworker from another unit thinks differently and that is why there are conflicting opinions about parking or that because of different work tasks, another unit behaves in a way that is harmful to another unit.

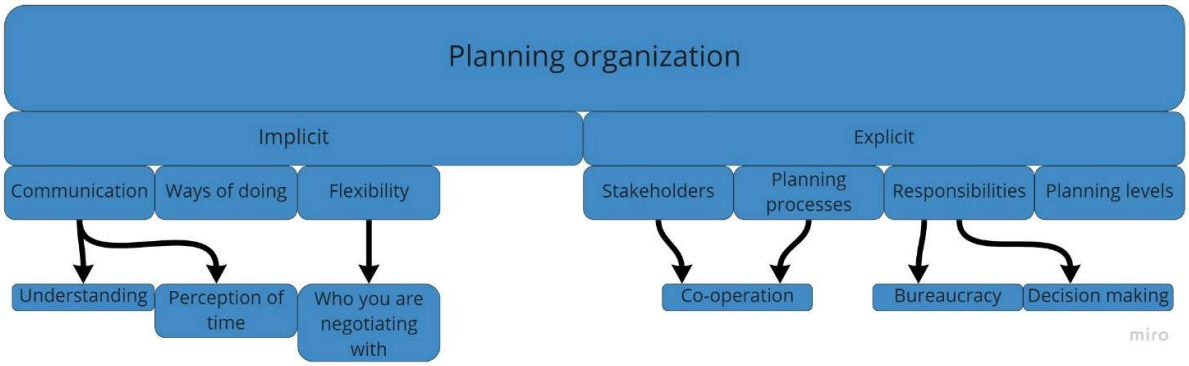
Organization

It was suggested that the transportation unit would be situated in the organization more closely within the city planning department rather than as its own unit because then differences could be solved through the decision of the head of one department rather than two departments disagreeing. This suggestion came outside of the transportation unit.

Timing of plans

Sometimes all the activities that were planned on the street do not fit. It is because more detailed street design comes after more general planning of the street. The detailed plan needs to be approved before more detailed street plans can be approved. To fit all the activities from detailed plans to street plans, there are preliminary street plans, where street design is planned already in the more general part of planning. The street design sees that parking planning has failed in the earlier phases if there are difficulties to fit all the wanted activities in the street plan.

The topics and subtopics discussed in this chapter about planning organization are presented in picture 15. The codes are also divided into implicit and explicit.



Picture 15. Planning organization topics and subtopics.

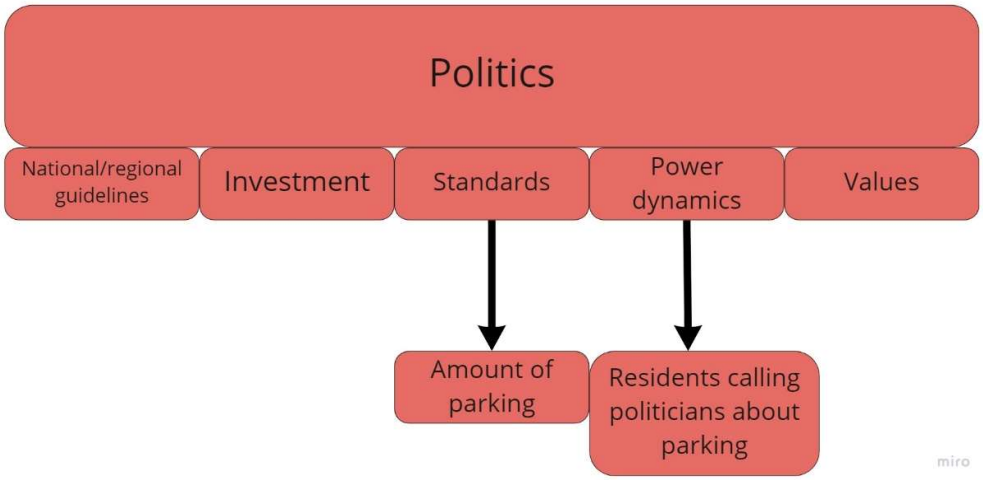
5.1.6 Politics

Although standards are a topic that belongs to politics, it is highly connected to policy because it is the main planning tool that planners use when planning parking. That is why standards were covered in length in chapter 5.1.4. However, the standard and therefore amount of parking related to development is a decision that politicians make. Some interviewees even said that it is not possible to "plan" parking because the standard is given from higher in the hierarchy.

Participant 4.1.:" There's no such thing as planning parking. It's given (the standards)."

One interviewee told that residents influence through politicians to on-street parking. In Kivistö there have been instances where a resident has contacted the town council about a lack of parking and then there has been pressure from higher from the hierarchy to change plans and provide more parking to areas, where parking had not been planned in the first place.

The topics and subtopics that were discussed in this chapter about politics are presented in picture 16.



Picture 16. Politics topics and subtopics.

5.1.7 Overarching

Climate issues were underlying in the conversations, but it was not the main topic or straightforwardly mentioned many times. Even when asked straight about the carbon neutrality goal of Vantaa, the conversation moved to other topics. The gas price rise was mentioned a few times as the main reason why people would give up on driving. The importance of Vantaa alone in parking policy or climate issues was questioned. In built parking structure it was said that the most polluting parking solution is the underground parking. National or regional guidelines were mentioned in the sense that some participants did not believe that Vantaa alone can change parking policy that is different from other municipalities.

There was a comment, that even though the participant drove a car and that's why planning fewer parking spaces made their own life more challenging, the participant still believed that it is the correct way to plan a city.

Participant 3.2.: "Even though I am professionally the one that makes driving harder, in my personal life I drive a car a lot. So, I am kind of shooting myself in the foot all the time, but I still think that this is the right thing to do, this is the way to plan a city. "

Different types of technological developments, like autonomous vehicles and robot parking, were also mentioned as a solution to parking-related issues such as limitation of space in urban structure and more effective rotation of parking spaces.

5.2 Pragmatic recommendations

In this chapter pragmatic recommendations based on the focus group interviews will be presented. The research questions presented earlier will be answered, focusing on how to implement parking-related vision and strategy toward more sustainable ways of mobility in practice.

Policy design

Creating a parking company/market

City-owned parking company was the policy instrument that was mentioned the most to be missing. According to the experts interviewed, it could help build the parking market, shift the costs to the users and make space used for parking more effective. It is also contradicting, that city offers cheaper parking areas for residents when at the same time the city requires through parking standards to build multistorey parking garages. It seems that the idea of a city-owned parking company has been around for a long time, but it has not gone through the decision-making process and/or it has not been presented to politicians.

City-owned parking company has been done in other places before. For example, in Finland, there are city-owned parking companies in Tampere, Jyväskylä and Joensuu. Abroad for example Linköping has a city-owned parking company called Dukaten. Though it has not been profitable (in 2019), it was seen as necessary for the city's mobility strategy. (Vaismaa, ym., 2019).

Cost of parking

The charge zones should be expanded to the whole municipality. The on-street parking should not compete with off-street parking garages when one planning goal is to move parking to the garages. That is why it is important to make on-street parking more expensive than garage parking.

The cost of parking should be focused on users. To do this, on-street parking can't be a free service provided by the municipality and parking garage costs should be unbundled from apartments. For the disadvantaged who need a car, there could be discounts or compensation.

Meeting structure / communicative planning methods

During the focus groups, the participants mentioned that it is good to have this kind of conversation about parking or that it is not clear if the city has decided on a parking strategy. Some participants felt that conversation about parking-related issues is something that needs to be discussed through different departments. There are cross-sectoral meetings, and projects but parking might be left unrecognized because of other, more pressing issues. More general and strategic discussions between different units about

developing parking should be conversational in nature rather than bringing single, isolated parking problem to the discussion. The district plan (kaavarunko) was mentioned to be a good tool to have cross-sectoral discussions about different topics.

Data collection

There is a lack of data about the current utilization rate of off-street parking garages that were mentioned often. Another missing information was related to the costs, and systematic evaluation of the pros and cons of city-owned parking company. Also, data and costs of the unbundling are needed, meaning that does unbundling really influence housing prices and how much.

6 Discussion and recommendations

6.1 Discussion of findings

According to Barter's parking typology, the mindsets toward parking in Vantaa are still very conventional, parking is seen as a mandatory service that the municipality has to offer in some form or another and many regulations guide parking planning. The supply should at least match demand. There are however signs in the mindset of moving towards more restrictive supply to move people away from driving. For example, the free parking criticism and the idea to establish a commercial parking market suggest that the mindset might me moving. Moderate transition between mindsets is typical (Barter, 2015). The literature shows strong criticism towards minimum standards (Syrman & Kanninen, 2015), however, in the interviews the removal of standards did not get support although was simultaneously criticised by interviewees. Focusing on standards supports the conclusion that the mindsets towards parking in Vantaa are conventional.

Parking policies could be an effective way to direct the transport system towards a healthier, more sustainable, more safe, denser, more aesthetic, and fair environment if one of the parking policy goals was not 'easy' parking for car users. The transport system has not been 'easy' for pedestrians, cyclists, and users of public transport for decades now, because policies favour drivers. It is contradicting to accommodate cars while trying to design for carbon neutral, sustainable and multimodal urban areas. "Managing" without a car is the bare minimum. Equity would be that since accessibility equals to being accessible by car, now accessibility should be primarily seen as accessibility by all other modes than a car.

Some argue that decreasing automobility should not be a goal, since there are goals to increase other modes. However, if decreasing automobility is not the goal and increasing other modes is, it means that the number of trips that people make, should increase. The number of trips that people make, is determined by the activities people participate in. An average number of trips has increased only by 8% between the years 1972 and 2000. (Lyons & Urry, 2005). Parking policies should influence the travel behaviour of people who drive since people who walk, cycle, or use public transportation are already behaving in a way that supports strategic goals. Guiding people using other modes than automobility is also a question of space, not only sustainability.

In the interviews, the climate issues connection to parking policies was not discussed much, even though it was underlying. The conversation revolved often around the necessity of a car for certain people because of work, family,

groceries, or hobbies, rather than common bigger-scale issues such as climate change. The connection between parking policy measures, sustainability, and everyday pragmatics seems to be difficult to grasp. That is why parking policy needs to be investigated more in the sustainability and practical point of view.

The biggest difference in views within the experts was the contrast between city objectives and resident aspirations. Should the city as an organization serve the residents even if the residents view is contradicting the city goals? Should the city pursue the major goals determined in the strategy despite some resistance from the residents?

Solutions outside of policies such as gas price and technological development are solutions where responsibility is transferred to things outside of policy measures. There are however ways to influence driving and parking through policy measures rather than waiting for technological innovations or the global economic situation to bring about change.

6.2 Discussion of Methodology and future needs

The focus groups overall succeeded well. There weren't major technical problems with Teams meetings or recordings. For three interviewees in a focus group, an hour was a little too short to get deeper into the subject since the conversation started to get going always at the end of the hour. Nevertheless, most of the topics in the interview protocol were covered in all focus groups. There was some feedback about the focus groups being online, that it is difficult to get a say or there is some talking over, so this should be considered. Focus groups are based on experts' personal opinions, which need to be remembered when going through the results. However, there were independent overlapping comments from different focus groups, so the results can be considered a reliable picture of experts' views on parking policy processes in Vantaa.

In this work experts' point of view on parking policies was investigated and the public point of view was addressed by investigating earlier web surveys made and articles written about the subject. Since web surveys suffer from a lack of representativity and therefore results are biased (Bethlehem, 2008) exploring opinions of people who do not drive about parking would be beneficial.

The function of the literature review was to outline policy tools and categorize different parking policy tools comprehensively. Parking policy tool categorization in NATO scheme was done in this thesis using the scheme as adjectives to portray parking policy tools properties regarding its nodality, authority,

treasure, and organization. This categorization however was not presented in the thesis entirely.

6.3 Recommendations for Vantaa parking policy development

One motivation for this work was the contradiction between municipalities' sustainability objectives and parking policies. Vantaa's strategy 2022 – 2025 goals and the *Resource Wise Roadmap* mention increase in public transport, walking, and cycling and carbon neural land use, but at the same time leaves decreasing automobility out. The parking strategy is acknowledged to be important to influence the modal share but at the same time parking has a small or non-existent role in the sustainability strategies.

- ➔ Recommendation: To minimize the contradictions in sustainability goals and parking policy, decreasing automobility should be mentioned in strategies and parking policies.

The large number of people who do not or cannot drive and are affected by the driving favouring nature of mobility policies was not discussed in length in the focus groups. Safety issues for non-driving residents in urban surroundings caused by driving, and cars was not discussed. Instead, the topic of discussion was inconveniences caused to drivers. The cost aspects were the dominant one for non-driving people, meaning that it was agreed that the costs of parking should be allocated to people who park and drive.

- ➔ Recommendation: To understand different user groups, creating personas, and mapping what kind of needs there are for different people for parking and maybe other needs that would require the space and money that is used for parking now.

The contradictions between major goals such as sustainability or preventing inequality and actions, requires extensive and systematic mapping of policies. Which measures drive towards strategic goals and what pushes those goals further away? Policy implementation is balancing between the big-scale societal goals and practice, that has not yet adapted to cultural change that requires more sustainable ways of mobility.

- ➔ Recommendation: Exploring parking policy categorization more in detail in Vantaa could be beneficial in the wider sustainability goals sense. Categorizing the parking policies could lead to a wider realization of repeated policy processes and how it supports path dependency in parking policies, and other policies regarding sustainability goals (Stead, 2021).

The conversation about daycare sizes and their effect on urban fabric and behaviour, and maintenance vehicle size as being the restrictive factor for street

width rather than the activities on street, were concrete examples of where policy integration and cooperation between different divisions towards bigger strategical goals would be needed.

- ➔ Recommendation: Integrating parking policy with other divisions outside of the urban environment division. Parking policy development could be arranged as cross-sectoral focus groups or workshops to find examples of barriers to more sustainable parking policy.

6.4 Recommendations for Kivistö

Kivistö centre has ambitious vision for the future. To achieve the vision with sustainable mobility, patience and consistent work is needed. Kivistö centre is also a relatively new urban area. The achievement of the Kivistö vision should not only be the responsibility of the detailed plan, but the whole urban planning division.

- ➔ Recommendation: There are cross-sectoral meetings regarding topics in Kivistö and these meetings should be continued. To increase the active conversation, participatory planning methods, such as workshops around the topic could be used.
- ➔ Recommendation: Consistency towards the vision is needed and it means, that all units working in Kivistö planning, need to commit to the made decisions. Already made decisions should not be changed in later planning phase.
- ➔ Recommendation: Continuing branding Kivistö as an area, that emphasizes walking, cycling, and public transportation as the main mode of transportation.

The temporary parking areas should not act as a competitor to the parking garage spaces. The cost of temporary parking areas should be at least as high as the garage spaces, especially if the parking garages are not full.

- ➔ Recommendation: To collect data about the utilization rate of the parking garages and determining a proper price for the city owned parking spaces.

References

Barter, P. (2015). A parking policy typology for clearer thinking on parking reform. *International Journal of Urban Sciences*, 136-156. doi:10.1080/12265934.2014.927740

Bethlehem, J. (2008). How accurate are self-selection web surveys? *Statistics Netherlands*, 3.

Fern, E. (2001). *Advanced focus group research*. Thousand oaks: SAGE Publications.

HSL. (2022, 9 15). *Liityntäpysäköinti*. Retrieved from HSL: https://www.hsl.fi/matkustaminen/liityntapysakointi?display=map&type=all-facilities&state=popup&lat=60.31497&lon=24.843235&zoom=10

HSY. (2022, Kesäkuu 6.). *Kasvihuonepäästöt: HSY*. Retrieved Kesäkuu 6., 2022, from HSY: https://www.hsy.fi/ilmanlaatu-ja-ilmasto/kasvihuonekaasupaastot/

King, D. (2022). Linking off-street parking to local transport and resilience policies. In *Urban Transport and Land Use Planning: A Synthesis of Global Knowledge* (pp. 163 - 180). Cambridge, USA: Elsevier. doi:10.1016

Kivistön suuralue. (n.d., n.d. n.d.). *Vantaa.fi*. Retrieved March 10, 2022, from Kivistön suuralue: https://www.vantaa.fi/kiviston_visio

Kivistön visio ja kaavarunko. (2022, n.d. n.d.). *Kivistön visio ja kaavarunko*. Retrieved March 11, 2022, from Vantaa.fi: https://www.vantaa.fi/fi/kaavoitus/kaavat/kiviston-visio-ja-keskustan-kaavarunko

Knoflacher, H. (2006). A new way to organize parking: the key to a successful sustainable transport system for the future. (I. I. Development, Ed.) *Environment & Urbanization*(Vol 18(2)), 387–400. doi:DOI: 10.1177/0956247806069621

Krueger, R. A., & Casey, M. A. (2000). *Focus groups; a practical guide for applied research*. Thousand Oaks, California: Sage Publications. Retrieved June 9, 2022

Lyons, G., & Urry, J. (2005). Travel time use in the information age. *Transportation Research Part A: Policy and Practice*, 257-276. doi:https://doi.org/10.1016/j.tra.2004.09.004

Manville, M., & Pinski, M. (2020). Bundled parking and travel behavior in American cities. *Land use Policy*(91), 1 - 11. Retrieved 3 23, 2022, from https://doi.org/10.1016/j.landusepol.2019.02.012

Margetts, H. Z., & Hood, C. C. (2007). *The Tools of Government in the Digital Age*. Palgrave Macmillan. Retrieved 5. 18., 2022, from https://books.google.fi/books?hl=en&lr=&id=dgcdBQAAQBAJ&oi=fnd&pg=PP1&dq=The+Tools+of+Government+in+the+Digital+Age&ots=X4zLZt1tsn&sig=jYntgqatxvJKD2-

K1xsWMv0EX3A&redir_esc=y#v=onepage&q=The%20Tools%20of%20Government%20in%20the%20Digital%20Age&f=false
Milosavljevic, N., & Simicevic, J. (2019). *Sustainable parking management - Practices, Policies, and Metrics*. Amsterdam: Elsevier.
Morgan, D. (2019). *Basic and advanced focus groups*. Los Angeles: SAGE Publications.
Pojani, D., Corcoran, J., Neil, S., Mateo-Babiano, I., & Stead, D. (2020). *Parking: An International Perspective*. Amsterdam: Joe Hayton.
Puchta, C., & Potter, J. (2004). *Focus group practice*. London: Thousand Oaks: SAGE.
Ramboll, WSP, Vantaa. (2020). *Pysäköinnin kehittäminen Vantaalla 2020 - 2025*. Vantaa: Vantaa.
Shoup, D. (1999). In Lieu of Required Parking. *Journal of Planning Education and Research*(18), 308 - 320. Retrieved Kesäkuu 3., 2022
Shoup, D. (1999). The trouble with minimum parking requirements. *Transportation Research*(33), 549 - 574. Retrieved Kesäkuu 6., 2022
Shoup, D. (2004). The ideal source of local public revenue. *Regional Science and Urban Economics, 34*, 753 – 784.
Shoup, D. (2005). The High Cost of Free Parking. In D. Shoup, *The High Cost of Free Parking* (p. 6). New York: Routledge. doi:https://doi.org/10.4324/9781351179539
Stead, D. (2021). Conceptualizing the Policy Tools of Spatial Planning. *Journal of Planning Literature*, 297 - 311. doi:DOI: 10.1177/0885412221992283
Syrman, S., & Kanninen, V. (2015). Front lines of parking reform: policy debates in the intensifying Helsinki region. Retrieved March 11, 2022
Traficom. (2021, Toukokuu 25.). *Liikenteen kasvihuonekaasupäästöt ja energiankulutus: Liikennefakta*. Retrieved Kesäkuu 6., 2022, from Liikennefakta: https://liikennefakta.fi/fi/ymparisto/liikenteen-kasvihuonekaasupaastot-ja-energiankulutus
Trafix. (2015). *Toimisto- ja liiketilojen auto- ja pyöräpaikkojen laskentaperiaatteet asemakaavoituksessa*. Helsinki, Espoo, Vantaa: Helsinki, Espoo, Vantaa. Retrieved from https://www.hel.fi/static/public/hela/Kaupunkisuunnittelulautakunta/Suomi/Paatostiedote/2015/Ksv_2015-12-08_Kslk_30_Pt/1A7B10C3-6F9B-4C72-9EC3-FAD38196CAB1/Liite.pdf
Vaismaa, K., Karhula, K., Huhta, R., Lahtinen, T., Cruzdaitis, L., Bäckström, J., & Jaakola, H. (2019). *WSP Finland Oy - Pysäköinti 2.0* . Retrieved Kesäkuu 7, 2022, from Pysäköinti 2.0: http://pysakointi20.com/projekti/
Vantaa. (2018). *Asuntoalueiden pysäköinnin mitoitusohje*. Vantaa: Vantaa. Retrieved from

https://www.vantaa.fi/sites/default/files/document/Asuntoalueiden%20pys%C3%A4k%C3%B6innin%20mitoitusohje%202018.pdf
Vantaa. (2020, 12 14). *Päätökset Vantaa*. Retrieved from Yleisen pysäköinnin maksut: https://paatokset.vantaa.fi/ktwebscr/fileshow?doctype=3&docid=2099366
Vantaa. (2021, n.d. n.d.). *Liikennetieto*. Retrieved from Vantaa liikenne 2021: https://www.vantaa.fi/sites/default/files/document/Vantaa%20liikenne%202021.pdf
Vantaa. (2021). *Vantaan ympäristövastuuraportti 2020 - 2021*. Vantaa: Vantaa. Retrieved from https://www.vantaa.fi/sites/default/files/document/vantaan-ymparistovastuuraportti-2020-2021.pdf
Vantaa. (2022, n.d. n.d.). *Pysäköinti*. Retrieved Maaliskuu 29, 2022, from Vantaa: https://www.vantaa.fi/fi/asuminen-ja-ymparisto/liikenne/pysakointi
Vantaa. (2022a). *Innovaatioiden Vantaa, Kaupunkistrategia 2022 - 2025*. Vantaa: Vantaan kaupunki. Retrieved from https://www.vantaa.fi/sites/default/files/document/Vantaan%20kaupunkistrategia%202022-2025.pdf
Vantaa. (2022b). *Resurssiviisauden tiekartta*. Vantaa: Vantaa. Retrieved from https://www.vantaa.fi/sites/default/files/document/Resurssiviisauden%20tiekartta_0.pdf
Vantaa. (2022c). *Vantaa liikenne 2021*. Vantaa: Vantaa. Retrieved from https://www.vantaa.fi/sites/default/files/document/Vantaa%20liikenne%202021.pdf
Vantaa. (2022d, 9 15). *Vantaan karttapalvelu*. Retrieved from Kartta.Vantaa: https://kartta.vantaa.fi/

Appendix 1

First:

- Introductions
- Introduction of the study and focus group themes
- Anonymity (unit will be mentioned, but no names)
- Can I record the teams meeting? Will be saved only until the thesis is done

*important questions

Vision/Strategy

- What kind of topics have you worked with related to parking? *
- What do you think are the most important goals regarding parking in Vantaa? *
  - Near future and 2045
- What kind of challenges do you see in parking now?
- How does parking support carbon neutrality and/or sustainable mobility goals?*
- What is the ideal supply and demand ratio in parking? *

Policies

- Is there some parking policies that are missing? *
- Is there something that should be changed or removed in parking policies?
  - How do you see the implementation of the missing policies?
    - Legality, admin, reason, acceptance
    - -> fairness, effectiveness, equity
- List of policies -> choose three most important *
  - Why are these important?
- How is money allocated for parking?

Actors/Processes

- What are some good practices in parking planning? *
- What kind of effects would you like to see with parking planning? *
  - Whose behavior is being changed?
- Who is missing from the parking discussions? *
- Do you feel like you have some knowledge gaps in the field?
- Have you encountered some innovative examples of implemented parking planning development projects/tools/trials? *
- What kind of arguments/reasoning you have used while promoting parking related issues?
- What do you think is the importance of the new parking policy for planning for parking? (for the transport unit)
  - Parking development in Vantaa 2020 - 2025 report?

In the end:

- Anything we havent discussed yet?
- Thank yous, and information where I can be reached if there are some questions afterwards, and that I might also send clarifying questions afterwards

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