

Post-growth ideas as the future of sustainable urban development

A critical discourse analysis on housing and mobility policy of the cities of
Münster and Freiburg, Germany



The inner city of Münster at night (Holidayguru, 2022).

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Abstract

The cities of Münster and Freiburg face the challenge to make a decision regarding the challenge of economic growth and climate goals. This research discusses two opposing discourses. The more prominent green growth discourse aims at decoupling environmental impacts from economic growth, but research argues this to be impossible at a fast enough pace. As a solution, the post-growth discourse argues for the need of societal change due to the incompatibility of climate goals and continued focus on economic growth. By conducting a critical discourse analysis, this research analyses approaches discussed in the housing and mobility sectors of the two cities pointing out whether these approaches link to ideas of the green growth or post-growth discourse.

The main discourse in housing policy is the lack of living space, especially that of social housing units. Münster follows economic growth ideals with a focus on building additional housing for all residents. Freiburg takes a different approach by prioritising social housing and shared living developments. In mobility policy, Freiburg prioritises limiting and reducing growth by focusing on avoiding the need for traffic. Münster focuses on shifting modes of transport and thus following post-growth ideas while at the same time promoting EVs and with it continued economic growth ideals. In conclusion, Freiburg is more open to develop in a direction that links with post-growth ideas than Münster currently is. The planning debate can learn that integrated approaches both within and between policy allow for the sustainable development of the urban.

Keywords

Post-growth, green growth, critical discourse analysis, housing, mobility, Münster, Freiburg

Contents

Chapter 1: Introduction.....	1
Chapter 2: Theoretical framework	2
2.1 Discourse and discourse analysis	2
2.2 Green growth discourse	3
2.3 Post-growth discourse.....	4
2.4 Approaches in urban policy.....	5
2.4.1 Housing.....	6
Energy efficiency	6
Floor space	6
Type of housing	7
Summary on growth.....	8
2.4.2 Mobility	8
Electric vehicles	8
Giving up the car	9
Mobility as a Service.....	10
Public transport.....	11
Active travel.....	12
Summary on growth.....	12
2.5 Conceptual model	13
Chapter 3: Methodology	14
3.1 Research design.....	14
3.2 Data collection.....	14
3.3 Data analysis.....	15
3.3.1 Text analysis	15
3.3.2 Discursive practice.....	16
3.4 Limitations and ethics.....	16
Chapter 4: Analysis	17
4.1 Discourse analysis Münster.....	17
4.1.1 Case description	17
Sufficiency – not only a value premise	18
Cross-sectoral focus as Value premise	19
4.1.2 Housing discourse	19
Energy efficiency measures and refurbishment of existing housing stock	19
Reducing floor space as a potential sufficiency strategy	20

Inequality in social housing	21
4.1.3 Mobility discourse	22
Values	22
Traffic avoidance narrative.....	23
Active travel and public transport as a Means-goal premise.....	23
Multi-modal travel.....	24
Commuters	24
About making conventional car use electric	25
4.1.4 Preliminary conclusions Münster	25
4.2 Discourse analysis Freiburg	27
4.2.1 Case description	27
Value premises of the Compact city.....	28
5.2.2 Housing discourse	28
Refurbishment of the existing housing stock increases energy efficiency.....	28
Shared living as a Means-Goal premise to reduce floor space	29
More efficient use of floor space through home exchange	30
Property policy approach to achieve social goals	30
5.2.3 Mobility discourse	30
Avoid.....	30
Shift	31
Electrification of the eco-mobility sector	33
Improve	34
5.2.4 Preliminary conclusions Freiburg	34
5.3 Discussion	36
Chapter 5: Conclusion	37
Bibliography.....	39
Appendix.....	46
Appendix I – Code tree ‘Housing’	46
Appendix II – Code tree ‘Mobility’.....	46

List of tables and figures

Figure 1 - Conceptual model	13
Table 1 - Policy document database	15
Table 2 – Policy approaches Münster	27
Table 3 - Policy approaches Freiburg	36

Abbreviations

ADFC – Allgemeiner Deutscher Fahrrad-Club (General German Bicycle Club)

EKC – Environmental Kuznets Curve

EV – Electric vehicle

GDP – Gross Domestic Product

GHG – Greenhouse gas

IAM – Integrated Assessment Model

MaaS – Mobility as a Service

MIV – Motorisierter individual Verkehr (Motorised individual travel)

OECD – Organisation for Economic Co-operation and Development

VCD – Verkehrsclub Deutschland e. V. (German Traffic Club)

Chapter 1: Introduction

The world faces the enormous challenge of climate change and faces the need to reduce their impact on the planet. Increasing urbanisation and the susceptibility of the urban to the consequences of climate change show the importance of a more sustainable urban development. Measures in the housing sector focus on energy efficiency while at the same time energy use rises due to increasing per capita floor space. In mobility, sustainable transport is to be achieved through technological innovation, but the uptake of electric vehicles does not happen at a fast pace and conventional engines still dominate. Per capita floor space in Germany has more than tripled in the last 70 years and linked to this, are large increases in energy use despite energy efficiency measures being introduced. Public transport, biking and walking often lack behind the mode of transport number one, the automobile. Large parts of the city are taken up by infrastructure geared towards car use, with the result that using the car is much more convenient. This reflects in the number of cars of 47 million in 2019, an increase of 15% since 2010 (Böcker *et al.*, 2020).

One prominent approach to reach the current climate goals is the concept of green growth, which is argued by some intergovernmental organisations to allow the current system of economic growth to continue. Decoupling economic growth from intense resource use is to be achieved through the use of technological innovation (Haberl *et al.*, 2020). Research has shown that solely relying on these solutions cannot possibly be achieved fast enough to limit global warming to 1.5°C as signed by many countries under the Paris Agreement (Paulson, 2017). Opposing the idea of green growth is the concept of post-growth which sees an unresolvable conflict between economic growth and sustainability. Post-growth moves beyond economic growth as the measure for success and towards other indicators like well-being, social and environmental justice. In order to address the challenges of climate change, cities solely relying on approaches linked to the green growth discourse in their policies will not achieve satisfactory outcomes. Based on these assumptions, this research analyses the housing and mobility policies of the cities of Münster and Freiburg. To determine whether these approaches link to ideas of the green growth or post-growth discourse, the following research question is answered:

What approaches linked to the green growth and post-growth discourses, aiming at reaching climate goals of the respective cities, can be observed in housing and mobility policies in Münster and Freiburg?

Five sub-questions help answering the main research question:

- 1. What distinguishes the green growth discourse from the post-growth discourse?*
- 2. In current literature, what green growth and post-growth discourses are present in the housing and mobility sectors?*
- 3. What green growth and post-growth discourses are used in housing and mobility policies in the city of Münster?*
- 4. What green growth and post-growth discourses are used in housing and mobility policies in the city of Freiburg?*
- 5. How are the green growth and post-growth discourses found in the housing and mobility policies of Münster, and Freiburg different and/or similar?*

A goal of this research is to grow the body of literature on the post-growth discourse. This is done by providing a critical discourse analysis of two forerunner in sustainable urban planning in the most

urgent societal and political challenges, namely housing and mobility. This should help planners and policymakers understand the need to consider approaches linked to the post-growth discourse in urban planning. There is not yet much research on the extent to which post-growth discourses are present in policy documents of the housing and mobility sector and this knowledge gap is addressed in this paper.

The following chapter 2 outlines the theoretical background of the green growth and post-growth discourses, as well as aspects important in urban planning from the housing and mobility sectors. After this, chapter 3 outlines the 'Critical Discourse Analysis' part of which is a text analysis following Norman Fairclough that makes use of different premises. Chapter 4 first looks at the case of Münster, followed by the case of Freiburg. Premises found in housing and mobility policies of the two cases are analysed to find out how these link to green growth and post-growth ideas. The discussion points out differences and similarities between the two cities. Finally, chapter 5 concludes this research by answering the main research question, and giving recommendations for future research.

Chapter 2: Theoretical framework

This chapter outlines the theoretical framework of this research by answering the following two sub-questions:

What distinguishes the green growth discourse from the post-growth discourse?

In current literature, what green growth and post-growth discourses are present in the housing and mobility sectors?

It addresses the relevance of discourse and discourse analysis in environmental policy making, the discourses of green growth and post-growth, and policy approaches in the housing and mobility sector for each of the discourses. Both green growth and post-growth approaches are discussed including their upsides and downsides to understand the actual potential these different alternatives offer in an urban context, and to outline the different discourses present. Lastly, the conceptual model this research follows is described.

2.1 Discourse and discourse analysis

Discourse, as defined by Hajer and Versteeg, is "an ensemble of ideas, concepts and categories through which meaning is given to social and physical phenomena, and which is produced and reproduced through an identifiable set of practices" (2005, p. 175). Understanding these discursive patterns thus allows one to better understand social and physical phenomena as well as how they change over time based on certain practices. This research looks at how the discourses of green growth or post-growth are addressed by environmental policy. Practices proposed in said policy in the housing and mobility sector are discussed to understand which discourse is prevalent in current policy.

Authors discuss a specific problem in environmental policy making and point out a prominent example. Hajer and Versteeg (2005) argue that environmental policy making can be biased due to certain discourses present, both when conceptualising the problem as well as when finding possible solutions to the problem. An example of this is that if actors with large amount of power feel threatened by emerging discourses, they might aim to battle said developments on the discourse level (Dryzek, 1997). This is not often done by openly opposing the emerging discourse but by

engaging with it, for example the connection between the economic growth paradigm and 'sustainable development' (Dryzek, 1997; Oels, 2005).

2.2 Green growth discourse

The concept of green growth has been widely discussed by several intergovernmental bodies during the 2010s as a potential panacea to the growing threat of climate change (European Commission, 2019; OECD, 2011; World Bank, 2012). It is defined in their policy documents inter alia as "green growth is growth that is efficient in its use of natural resources, clean in that it minimizes pollution and environmental impacts, and resilient in that it accounts for natural hazards" (World Bank, 2012, p. 2). The European Commission recently writes that, "The aim is to create more value while using fewer resources, and substituting them with more environmentally favourable choices wherever possible" (European Commission, 2019). Both definitions highlight continued economic growth and point out that an increase in efficiency and technological innovations make sustained growth of GDP possible while at the same time reducing environmental impacts. Antal and van den Bergh identify two methodological approaches used by proponents of green growth to show the feasibility of the concept (2016). One being IAMs and the second one being the Environmental Kuznets Curve (EKC) model. IAMs predict low to moderate costs for the growth of GDP when strict climate policies are enforced. The authors argue, that IAMs do not consider many risks associated with green growth. The EKC model argues that negative environmental impacts only increase up until a certain *per capita* GDP and reduce afterwards when affluent individuals start becoming more environmentally aware (Shahbaz and Sinha, 2019). Meunie and Pouyanne see only a weak correlation between individual wealth and polluting emissions in the mobility sector (Meunie and Pouyanne, 2007). They observe a difference between objective influences and subjective variables. The former is described as contingences and systemic characteristics whereas the latter entails individual consumer choices. Here objective influences seem to weakly support the EKC model and subjective variables oppose the model. A subjective variable is wealthier people using forms of private mobility that result in larger emissions like private airplanes. Overall, global patterns of GHG emissions do not follow the EKC model and it can only be confirmed for a subset of environmental problems (Antal and Van Den Bergh, 2016).

The concept that underlies the idea of decreasing environmental impacts while keeping up a continued economic growth is called 'decoupling'. Research defines two different types of this concept, absolute and relative decoupling. Both entail the process of continued GDP growth but while 'relative' decoupling sees the economy growing faster than environmental impacts, 'absolute' decoupling sees a reduction in environmental impacts (Haberl *et al.*, 2020). To reach climate goals, there is scientific consensus that the process of decoupling needs to be absolute, global, fast paced, and long-term (Haberl *et al.*, 2020; Vadén *et al.*, 2020). To note, when the process of decoupling is discussed it can either be GHG emissions or resource use that is decoupled from environmental impacts. Oftentimes the two are discussed in unison, differences can be observed, however. With regards to resource use, Vadén *et al.* argue that to completely decouple the economy, 2.6 times as much GDP has to be produced from every ton of resource used (2021). They calculated that such an increase in resource productivity is impossible to achieve at a fast enough pace. Hickel and Kallis argue that absolute decoupling of resource use is impossible on a global scale and while absolute decoupling of GHG emissions is possible, it is not possible at a fast enough pace to reach the goals set out in the Paris Agreement (2020). This is supported by a study that investigates the feasibility of decoupling GDP from GHG emissions and concludes that solely relying on decoupling poses a large

risk (Antal and Van Den Bergh, 2016). The authors make two main arguments, firstly, that the required reduction in carbon intensity is much larger than has ever been reached until now and secondly that there is a low possibility that international climate policies are soon to be introduced.

The effect of efficiency strategies is reduced because of the concept of the rebound effect also known as the Jevons' effect. It describes the process that increases in resource and energy efficiency lead to an increase in resource and energy demand offsetting potential gains (Santarius, 2012). The rebound effect can be 'direct', take effect in the same area that efficiency gains have taken place, 'indirect', take effect in a different area from the initial efficiency gains, or 'structural', take place on a macroeconomic scale where efficiency gains effect the whole sector (Santarius, 2012). Research shows that the size of rebound effects is much debated and differs between cases (Aydin, Kok and Brounen, 2017; Greening, Greene and Di, 2000). An example is a Dutch study on the rebound between homeowners and renters, with homeowners experiencing an effect of 27% and renters an effect of 41% (Aydin, Kok and Brounen, 2017). Furthermore, the study shows that there is a difference in rebound effects based on the socio-economic status of the residents. Pointing out that the rebound effect decreases with an increase in wealth. Apart from rebound effects, another concept to consider are externalities.

Research has shown that relying purely on green growth to reach climate targets is unrealistic for several reasons. One of the main hinderances to the green growth approach is the pace that these developments are taking place in. The concept of decoupling it is not realistic when looking to stay within the 1.5°C-2°C goals agreed upon at the COP 21 in Paris. Further slowing down the process are different types of rebound effects with an impact that is hard to determine. The core idea behind the green growth discourse sees the potential for sustainable development while at the same time continuing to achieve economic growth. Research shows however, that only focusing on technological innovation is not enough and other approaches are needed to reach the current climate goals.

2.3 Post-growth discourse

Post-growth focuses on the premise that there is a need for societal change rather than technological innovation to combat climate change. This is in stark contrast to the current economic paradigm as well as green growth ideas. Because of many identified problems with green growth, authors have started to discuss the idea of post-growth more substantially as a way to address environmental and social justice issues. There is some theoretical work done but up until now it has not yet seen much use in official policy documents around the world as it would call for a paradigm shift.

Jackson (2009) has found that growth of *per capita* GDP beyond US\$ 15.000 in the year 2002 had little effect on improving well-being. Furthermore, he argues that there is a need for 'prosperity without growth'. Meaning that it should be possible for people to live a good life by not focusing on economic growth as the determinant. These findings are supported by Vogel *et al.* who link economic growth beyond moderate levels to greater energy needs and lower impacts on satisfaction levels (2021). In more recent work Jackson points out that a focus on economic growth benefits the few rather than improving the wellbeing of the many (2019). Research identifies the importance of considering social justice when discussing climate change mitigation policies (Agyeman, 2013; Jakob and Edenhofer, 2014; Markkanen and Anger-Kraavi, 2019). Agyeman argues that matters of social justice should be at the forefront of sustainability goals because this is the only way in achieving these goals for all members of society. Groups of lower socio-economic status are more susceptible

to poorly designed policies and at the same time are more at risk from the consequences of climate change (Markkanen and Anger-Kraavi, 2019).

The concept of post-growth is not unanimously defined in literature and researchers have a varying interpretation when applying it in their studies. For the context of this paper, post-growth is understood as taking a new focus in urban development and policies supporting this process. This new focus is based on three underlying assumptions slightly adapted from Strunz and Schindler (2018):

1. Resource use needs to be in line with ecological limitations
2. Policy documents are not written up based on GDP as the guiding principle
3. Gains in resource and energy productivity are to be turned into reducing material throughput until the first assumption is fulfilled

Assumption 1 highlights the fact that changes in resource use need to occur to reach climate goals. To make sure this is the case, changes to the current system need to be made. Following van den Bergh (2011), GDP is a poor indicator for social welfare and should therefore not be considered in just policy. Based on this, assumption 2 is formulated as social welfare should be focused on instead of GDP. Assumption three points out the need to not have higher material throughput as a result of resource and energy productivity gains as this would be incompatible with assumption 1.

Sufficiency is defined by the idea of 'enoughness' which aims at reducing resource use and emissions (Jungell-Michelsson and Heikkurinen, 2022). It identifies consumerism as the mainstream paradigm and calls for a behavioural change (Gorge *et al.*, 2015). In planning, policy aimed at sufficiency has the goal to make it easier for residents to choose the more sustainable options whilst deterring them from using the unsustainable alternative. For the mobility sector this would mean strengthening public transport infrastructure and shortening distances to make biking and walking more attractive (Böcker *et al.*, 2020). Jungell-Michelsson and Heikkurinen argue that the use of energy and resources for human activities needs to reduce (2022). They argue further that this is done through a more just distribution of resources, especially between the global South and North, and local modes of production. Furthermore, the authors identify the fact that sufficiency policy might not be considered because a reduction in economic output is often linked to a reduction in quality of life. Even though sufficiency researchers argue that a shift away from material values towards non-material values could even increase said quality of life. Jackson explains this as a move in labour towards the tertiary sector and with it a reduction in labour productivity growth enables forms of work that are not only more sustainable in material terms but can also increase social wellbeing as they include work fields like crafts or care (2019).

The post-growth discourse therefore clearly breaks with the current focus on economic growth and argues that societal change, in the form of sufficiency measures and different human behaviour, is needed to reach our climate goals.

2.4 Approaches in urban policy

The following two sections outline urban policy approaches that aim at the sustainable development of cities. The chosen literature comes from the fields of housing and mobility with special emphasis on resource use, energy use, and greenhouse gas emissions linked to these sectors in an urban context.

2.4.1 Housing

The three next paragraphs consider the energy efficiency of the existing housing stock as well as to be built housing, the amount of floor space used per person and its influence on energy consumption, and the impact that the type of housing and the density linked to this has on energy use.

Energy efficiency

Literature discusses a range of different measures to make housing more energy efficient in order to reduce energy consumption. Nair, Gustavsson and Mahapatra point out two different types of measures taken to make existing houses more energy efficient, namely non-investment and investment measures (2010). Non-investment measures do not require the inhabitant to invest money into improving the energy efficiency of their dwelling, these are linked to behavioural changes like for example turning off the lights when leaving a room. Under the category of investment measures fall all technological improvements that are made to the residence. Several authors point out the importance of considering the whole life cycle of these investments (Gustavsson and Joelsson, 2010; Pittau *et al.*, 2019). A Study on potential emission reduction from the housing sector done in the US found that large reduction potentials are linked to efficiency measures and electrification (Langevin, Harris and Reyna, 2019). Finding the strongest impacts to be in the form of efficiency measures and electrification through building controls, heat pumps as well as building envelopes like facades. The implementation of heat pumps is supported by Gustavsson and Joelsson, who additionally identify district heating and biomass-based heating systems to significantly reduce CO₂ emissions (2010). Pittau *et al.* discuss the potential of different materials used in the insulation of facades in order to reduce CO₂ emissions (2019). According to them, most promising is the use of straw as a material because its life cycle emissions are already compensated after three years. Furthermore, the type of energy used is important when discussing emissions in the housing sector (Gustavsson and Joelsson, 2010; Langevin, Harris and Reyna, 2019).

Studies from different European countries suggest potential policies that can play a role in emissions reductions. A Swedish study identifies cost savings in the long-term, economic incentives and having access to information as vital when trying to incentivise residents to invest in measures (Nair, Gustavsson and Mahapatra, 2010). A UK study argues that relying on low carbon building materials and the role out of zero-carbon buildings on a large scale are not enough to reach emission reduction targets on their own (Cabrera Serrenho *et al.*, 2019). They do suggest that these measures can play a role and that this potential could be tapped into by incentivising refurbishing of old buildings and offering financing plans through policy. Multiple authors suggest that reducing housing sizes can play a large role in CO₂ emission reduction (Cabrera Serrenho *et al.*, 2019; Clune, Morrissey and Moore, 2012). In addition to reducing emissions, the resources and investments needed can be decreased. The potential demolition and subsequent recycling of materials at the end of housing life cycles should also be considered (Gustavsson and Joelsson, 2010).

Floor space

Researchers stress the importance of applying sufficiency strategies in the housing sector to reach climate targets (Bohnenberger, 2021; Lorek and Spangenberg, 2019; Sandberg, 2018). The main measure these authors discuss is the reduction of *per capita* floor space. In recent years the average floor space in Germany has increased from 14 square metres in 1950 to 46.7 square metres in 2018 (Böcker *et al.*, 2020). This increase in floor space is linked to higher energy consumption for heating

purposes because of the larger volumes of air in the houses. In a study done in Germany with different social, environmental and housing stakeholders, they agree that without a focus on sufficiency there is a risk for gentrification, that housing is only built for investment purposes and that affordable housing will be increasingly difficult to provide (Bohnenberger, 2021). According to Lorek and Spangenberg, energy savings through efficiency measures are partly offset by rebound effects and income growth (2019).

Two studies discuss potential sufficiency policies that could be introduced in the German context (Bohnenberger, 2021; Lorek and Spangenberg, 2019). Public loans currently aimed at reducing energy use of buildings focus on the energy efficiency of the dwelling. Problematic is the fact that energy efficient houses end up using large amounts of energy because their floor size is extremely large. The authors suggest a focus on energy consumption per individual rather than per dwelling. Furthermore, elderly residents more often than others are living in large dwelling due to problems of lock-ins. They might live in an apartment with an old rental contract that allows them to live rather cheap, this stops them from moving to a place with lower floor space. The authors suggest that policy should address this problem and make it easier for individuals to move to a dwelling with smaller floor size. The social stakeholder group in the study by Bohnenberger does not identify the distribution of housing as important from a social justice perspective as they consider housing to be a product that more and more can be produced of (2021). Based on this, she points out the concept of spatial justice to be important in combining social and environmental goals.

Type of housing

Authors suggest a shift away from detached houses and towards larger quantities of apartments if climate change goals are to be reached (*Fuller and Crawford, 2011; Newton et al., 2000*). Research done on life cycle energy use on different dwelling types done in Australia found, that the energy use per person is significantly lower in apartments compared to detached houses due to apartments being more compact. Furthermore, an even larger difference between apartments and detached houses has been found when considering annual carbon dioxide emissions for heating purposes. Here, apartments show between 20-40% fewer emissions. These findings are supported by Fuller and Crawford (2011) who analysed housing developments in the city of Melbourne and its impact on energy demand and emissions. On the one hand, energy use and emissions linked to mobility can be drastically reduced through access to public transport which sees location as a positive indicator. On the other hand, census data in Melbourne shows an increase in housing sizes and an overall decrease in family size which results in higher per person energy consumption and emissions. They argue that apartments located closer to the inner city have a more positive impact than the current style of detached houses found in the suburbs, especially looking at travel emissions.

An important consideration is the current German housing stock when trying to address the idea of downsizing dwelling sizes. In Germany there are primarily three to four room apartments on the rental market but at the same time there are many single households (Lorek and Spangenberg, 2019). This shows a clear problem municipalities need to address when trying to supply sufficient low floor size dwellings. A more drastic approach discussed to reduce energy consumption of households is an increase in energy prices. Research found that even a slight increase can result in large reduction of energy consumption (Kaza, 2010; Lorek and Spangenberg, 2019). Important to keep in mind is that lower income households are at risk of energy poverty and higher energy prices could accelerate this process (González-Eguino, 2015). Lorek and Spangenberg suggest that a sufficient

amount of energy should be provided at low cost and individuals using more have to pay much higher prices for the additional energy consumed (2019).

Some considerations linked to increased density are brought forward in the literature. It has been argued that due to economies-of-scale in consumption, single households have higher per capita emissions than families (Heinonen *et al.*, 2013a). Researchers in Finland find that the advantages increased family size offers in terms of economies-of-scale consumption is offset by living in less dense suburban areas (Heinonen *et al.*, 2013b). They call for policy that makes living in denser urban areas more attractive for families and to pay attention to decreasing family sizes in said urban areas. In addition to this, an increase in the heat island effect, higher levels of pollution, and emissions due to outward travel for recreational purposes have been observed (Fuller and Crawford, 2011). It needs to be considered that the same inward mobility to get to activities in the city plays a role when living away from the urban centre. Lastly, higher availability of consumption possibilities in dense urban areas leads to the acquisition of more personal goods which offsets the positive effects of density when compared to suburban locations (Heinonen *et al.*, 2013b).

Summary on growth

Policy that pushes for energy efficiency of the housing stock, both existing and to be built, aims at making continued growth in the housing sector compatible with the reaching of environmental limits. This is done through the reduction of energy use that is linked to new technological innovation in the sector. Policy needs to aim at reducing the amount of floor space in order to lower individuals impact on the environment. Without the reduction in floor space, energy efficiency measures have less impact overall as energy consumption rises with higher per person floor space. This shows a clear link to reducing growth in the housing sector. Focusing on densification and shifting from single-family homes to apartments shows a link to limiting economic growth of the housing stock. This is the case because it links to a reduction in floor space at the same time.

2.4.2 Mobility

The following paragraphs outline policy approaches in mobility by considering the use of electric vehicles (EVs), the use of Mobility as a Service (MaaS), improvements to public transport, incentives for people to give up their private car, and active travel behaviour. According to the OECD the transport sector is responsible for 22% of global energy-related CO₂ emissions (OECD Bakker). This includes emissions linked to freight transport which is not part of the consideration for this research. Research shows that within the European Union the transport sector is the only major sector where GHG emissions are rising as of 2015. This research focuses on the individual travel of residents in Münster and Freiburg. An approach used by policymakers to achieve low carbon mobility is called Avoid-Shift-Improve (Bakker *et al.*, 2014; Wimbadi, Djalante and Mori, 2021). This approach identifies three different focus points, the need to *avoid* the need for travel, the *shift* to the most efficient or clean mode, and the technological *improvement* of the environmental performance (Bakker *et al.*, 2014). It is argued that the aspects should be prioritised in order, namely avoid then shift and lastly improve (Kagermeier, 1998).

Electric vehicles

Electric vehicles are discussed as a potential solution to the growing problem of conventional cars running on fossil fuels. The uptake of EVs aims at making economic growth compatible with climate goals as it maintains the status quo in mobility. A literature review on the environmental benefits and costs of electric vehicles found that the context is important to consider when discussing the topic.

Overall, it can be observed that EVs have a positive impact on air pollution and therefore health of urban populations as these options do not emit pollutants at the location of where they are driving (Requia *et al.*, 2018). This does not mean that there are no emissions that can be linked to the use and production of EVs. Researchers agree that both the type of energy used in charging and the production process are important considerations when discussing the feasibility of EVs (Jochem, Babrowski and Fichtner, 2015; Ma *et al.*, 2012; Requia *et al.*, 2018). In the short to medium-term EVs cannot be linked to drastic reductions in emissions due to marginal electricity used for charging which currently is most often based on fossil fuels (Ma *et al.*, 2012). The authors argue that the reason for this is that the share of renewable energies is not yet high enough to be the sole provider of energy to the charging process. EVs require additional energy to be added to the grid, which is often based on fossil fuels because it is more readily available. Furthermore, research found that it is important to consider the whole life cycle of EVs when looking at CO₂ emissions (Jochem, Babrowski and Fichtner, 2015). Apart from emissions linked to charging, another important aspect to discuss is the emissions occurring during the production process. Currently, through the production of EVs more CO₂ is emitted than when building a conventional car because battery production is not efficient. These high production emissions are said to decrease due to technological innovations in the future.

Literature suggests policies aimed at both reducing CO₂ emissions linked to the use of EVs as well as policies that can help with growing the market share of EVs and making them more attractive for residents to consider over the conventional car. Jochem, Babrowski and Fichtner suggest implementing controlled charging and putting an emphasis on reducing the CO₂ emissions linked to energy production in order to make the introduction of EVs an impactful consideration in emissions reduction (2015). This is supported by findings that in the long-term, once all electricity is based on renewables and the emissions linked to construction are lowered due to technical innovation, EVs are considered to have a large potential to reduce CO₂ emissions (Ma *et al.*, 2012). Controlled charging sees EV charging taking place during times where volatile renewable energy is readily available. Examples for this are charging taking place when the sun is shining in countries that rely on solar power plants or in windy conditions where wind parks are the primary source of renewable energy (Jochem, Babrowski and Fichtner, 2015). Controlled charging for EVs becomes increasingly more attractive the higher the market share of EVs. To grow the market share of EVs on the city level policymakers should focus on measures that built up and support infrastructure, show political leadership by using EVs, subsidise the purchase of an EV over that of a conventional car, and support car sharing services that use EVs (Bakker and Jacob Trip, 2013; Gass, Schmidt and Schmid, 2014; Perdiguero and Jiménez, 2012). Considered less feasible are measures like reserving on street parking for EVs, exempt them from tolls or allowing them to drive on designated bus lanes (Bakker and Jacob Trip, 2013). The reason for this is that it could contradict with other emission reduction measures like the promotion of public transport over the private car.

Giving up the car

Newman (2006) argues that planners play a key role in the reduction of car use. He points to the fact that even though the efficiency of the car has improved, at the same time there has been an increase in usage and with it in emissions and resource use. According to a study done on material footprint, drastically reducing individual private car traffic and reducing annual kilometres driven with any mode of transport from the current 17000km to 10000km is needed to reduce resource use enough to become sustainable (Lettenmeier, Liedtke and Rohn, 2014). In Germany the number of private

cars has increased by 15% to 47 Million in total (Böcker *et al.*, 2020). Both an increase in private cars owned combined with the fact that the use of the private car is linked to high levels of emission and use of resource shows the importance to change current practices.

There are several trial studies aiming at incentivising people to give up their private car to reduce emissions and growth of ownership (Kushner, 2005; Laakso, 2017; Ornetzeder *et al.*, 2008). The results of a recent study in Finland show that changing the mode of transport away from the family car has positive impacts on emissions (Laakso, 2017). In the city of Jyväskylä participants of a study gave up at least one car in exchange for travel passes that allowed for free bus travel. This resulted in reduced emissions due to a change in mode of transport. Another approach is the development of car-free districts where residents are legally bound to not own a car when signing their contracts (Kushner, 2005). A study done in Vienna compares such a car-free district to a non-car-free district, built around the same time and with residents that share similar characteristics (Ornetzeder *et al.*, 2008). Giving up their car was the biggest reason for reduced CO₂ emissions, but the purchase of green energy played a role too. Additionally, higher levels of social cohesion and more social contacts in the neighbourhood played a role in reducing per capita CO₂ emissions and an increased environmental awareness.

Aguilera and Cacciari (2020) identify that certain life events support the switch of transport modes such as relocation to neighbourhoods, urban centres or big cities in general that offer good public transport options. They argue that this allows policy makers to influence the decision making of individuals experiencing one of these events. This is supported by Senja Laakso (2017) who recognises a need to change daily habits if residents want to stop using their private car and start using public transport options. Because of this, the study showed more success for people that just moved into the city, moved house within the city, became unemployed or went into retirement. Policy instruments that are argued to help with the implementation of car-free districts are car-free zoning, new urbanism, car-free redevelopments, and pedestrian improvement districts (Kushner, 2005). In addition to these, proximity and high connectedness through public transport and quality bike paths are identified to be important for successful developments (Baehler and Rérat, 2020).

Lastly, some considerations and potential limitations to these approaches need to be pointed out. In the Finish context, there were some structural factors that were problematic. This include limited bus routes and low frequencies of buses which needs to be addressed to have more success (Laakso, 2017). Furthermore, authors found that primarily families and highly educated people live in car-free housing developments (Baehler and Rérat, 2020; Ornetzeder *et al.*, 2008). Because of this, emissions connected to higher forms of consumption have been observed which is the reason why only an overall reduction of 7% in emissions has been observed between the two settlements in Vienna (Ornetzeder *et al.*, 2008). It has to be pointed out, that the compared settlement had lower CO₂ emissions than average in Austria due to higher levels of public transport use, higher building density, and better heating infrastructure. Overall the reduction in CO₂ emissions might therefore be larger and could even grow if consumption is reduced further. Lastly, papers disagree on whether people moving into car-free neighbourhoods already gave up their car prior or give it up because of the neighbourhood setting (Nobis, 2003; Ornetzeder *et al.*, 2008).

Mobility as a Service

Mobility as a Service comes in various different forms. One of the most discussed types of MaaS is carsharing which aims at reducing the number of privately owned vehicles and newly purchased ones

in order to decrease emissions caused by the transport sector and limiting economic growth (Balac, Ciari and Axhausen, 2017; Bothos *et al.*, 2014; Martin and Shaheen, 2011). Additionally, research from the United States shows, that carsharing makes it possible for less mobile residents to become mobile which has been linked to slight increases in emissions (Martin and Shaheen, 2011). These increases are offset by emission reductions of households previously reliant on the car as it enables them to change their mobility behaviours. Furthermore, multiple studies show that the context in which carsharing takes place is important to consider. The authors point towards the importance of using EVs in carsharing fleets to avoid tailpipe emissions (Bothos *et al.*, no date; Jung and Koo, 2018). Referring back to the previous section on the feasibility of EVs, not only the positive impact of zero tailpipe emissions needs to be considered but also negative aspects like limited infrastructure, energy production, and construction costs.

Several studies discuss the importance of acknowledging the impact of carsharing on parking related issues (Akyelken *et al.*, 2018; Balac, Ciari and Axhausen, 2017; Chen and Kockelman, 2016; Dowling and Kent, 2015). Researchers agree that carsharing has the potential to reduce private car use and through it the overall number of cars (e.g. Balac, Ciari and Axhausen, 2017; Chen and Kockelman, 2016). The result is a reduction of needed parking space, which can play a positive role in contested urban areas. Parking is not only important to discuss because of different potential uses of space but also because it is vital for the success of carsharing services (Dowling and Kent, 2015). The authors found out, that strategies to change the behaviour of residents and education programmes can increase the uptake of carsharing but are only viable if sufficient parking infrastructure is provided. A study done in Zurich found price increases for parking tickets to have a positive impact on pressure peaks because the uptake of carsharing increases in the process (Balac, Ciari and Axhausen, 2017). Furthermore, authors agree that not only the public is an important actor, but the interplay between private and public actors is crucial (Akyelken *et al.*, 2018; Dowling and Kent, 2015). Another crucial aspect is the interplay between carsharing services and public transport as they should be integrated rather than competing against each other (Akyelken *et al.*, 2018). If it is possible to make carsharing services complement public transport it can have a positive impact on sustainable transport systems. According to the authors this can be accomplished by providing carsharing in less densely populated areas where public transport coverage is sparse.

Public transport

Public transport is generally considered more sustainable than individual car travel because larger number of passengers are sharing the vehicle. Bakker and Konings discuss the adoption of zero-emission buses in urban fleets, these can be both battery-electric and hydrogen fuel cell buses (2018). These buses have similar benefits and downsides as private EVs do. Zero tailpipe emissions result in less air pollution in the urban area but type of energy used and emissions linked to the construction need to be considered (Jochem, Babrowski and Fichtner, 2015; Ma *et al.*, 2012; Requia *et al.*, 2018). Compared to conventional diesel-powered buses, these alternatives are considered to have high implementation costs and the lower driving range leads to incompatibility with current driving schedules (Bakker and Konings, 2018). The authors address the assumption that these barriers are beyond the reach of public institutions. They point towards institutional lock-ins to be the reason instead of these technological barriers. Overall, increased uptake of public transport helps limiting growth in the mobility sector as residents share the same bus rather than making individual trips with their private car.

An Irish study found policy incentives that offer the user lower trip times or cost savings when using public transport over the private car are most effective for commuters in the Greater Dublin Area (Carroll, Caulfield and Ahern, 2019). Different research finds that general increases in service quality are needed with specific emphasis on frequency of public transport options as well as increased service reliability (Redman *et al.*, 2013). This is supported through policy advice given by Carroll, Caulfield and Ahern, who argue that money should not only be spent on improving public transport infrastructure but also to invest in improving and increasing daily operations (2019). Redman *et al.* argue, that one of the most important areas to address in research is the symbolic value that individuals attach to their car and that this needs to be replicated in public transport to make switching from the private car more attractive (2013).

Active travel

When it comes to modes of transport, active travel has been argued to be the most sustainable (Brand *et al.*, 2021). This mode includes cycling, walking, and the use of e-bikes and results in several positive outcomes such as emissions reduction, health benefits, improvements in air quality, and a reduction in traffic congestion (Bearman and Singleton, 2014; Brand *et al.*, 2021; de Nazelle *et al.*, 2010; Frank *et al.*, 2010; Neves and Brand, 2019). Research found that active travel is done primarily for short trips that have a maximum distance of 2km for walking, 5km for cycling and 10km for e-biking (Castro *et al.*, 2019). This shows that active travel has the potential to replace short car trips, which is significant in urban areas where a high percentage of car trips are over short distances (Neves and Brand, 2019). The replacement of short car trips is especially important because research has shown that these trips emit more emissions per kilometre travelled than longer trips do (de Nazelle *et al.*, 2010; Neves and Brand, 2019). The reasons for this are inter alia the engine starting cold and burning more fuel as a result, and the nature of car traffic in the city where the driver has to stop and start more often.

Ways of boosting active travel in urban areas has been extensively studied. Research found that public transport accessibility, residential density and street connectivity positively influence active travel behaviour (Cui, Mishra and Welch, 2014; Frank *et al.*, 2010). Furthermore, a change in the land-use mix towards a larger mix in functions resulted in a strongly significant reduction in CO₂ emissions (Winters, Buehler and Götschi, 2017). Said policies could address street layouts, building density, or transit-oriented developments. Studies in New Zealand, Wales and England show that the provision of high-quality bike and walking infrastructure has a strong positive influence on active travel (Goodman *et al.*, 2014; Keall *et al.*, 2018; Neves and Brand, 2019).

Summary on growth

The uptake of electric vehicles tries to support the status quo in the mobility of individuals as it allows for similar travel behaviour as the conventional car does. This clearly shows that it is an approach that aims at making economic growth compatible with reaching environmental goals. Incentivising individuals to give up their private car for a more sustainable alternative links to reducing economic growth. The uptake of carsharing and public transport leads to an overall reduction in number of vehicles on the streets which limits economic growth. Furthermore, active travel as the most sustainable mode of transport limits economic growth the larger its share becomes.

2.5 Conceptual model

Figure 1 depicts the conceptual model which depicts different aspects of housing and mobility that show in the policy documents analysed for this research. From top right to bottom left it shows that there are different approaches of the housing and mobility sectors that can be linked to ideas of either the green growth discourse, the post-growth discourse, or both. In housing, significant for this research are energy efficiency measures, the per capita floor space used, and the type of housing. Mobility looks at electric vehicle use, the concept of Mobility as a Service, public transport uptake, incentives for people to give up their private car, and active travel as an alternative mode of transport. Among others, policy in Münster and Freiburg is influenced by above mentioned ideas, and this can be observed in the policy documents of those cities. Thus, policy approaches can be linked to ideas of the green growth and/or post-growth discourse.

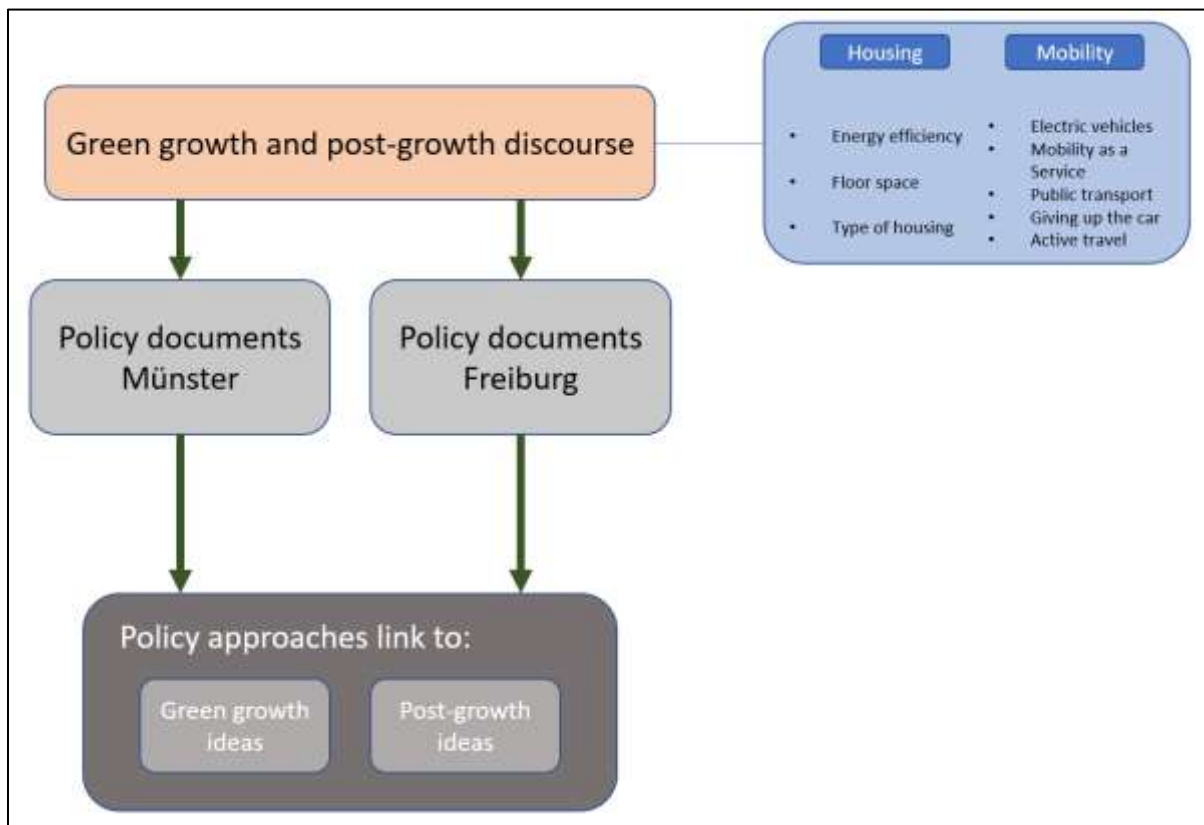


Figure 1 - Conceptual model

Chapter 3: Methodology

This chapter outlines the methodology used for this thesis' research. It shortly introduces the cases, explains the method used, namely a critical discourse analysis, and reflect on some limitations and ethical considerations.

3.1 Research design

The research conducts a document analysis making use of the method of a critical discourse analysis. Using a deductive approach, this analysis builds upon the previous theoretical framework. Judith Gross lays out the main steps for conducting a document analysis, namely determining the *type of documents* used, the *document sources and sampling*, the *data collection and management*, and the *data analysis* (2018). In the next paragraphs these steps are explained in more detail for this research.

The cases of this research are the two German cities of Münster and Freiburg im Breisgau. As a primary data source, the paper investigates policy documents from the housing and mobility sectors of the two cities as they are frontrunners in sustainable mobility and sustainable housing respectively (Deutscher Nachhaltigkeitspreis, 2012 & Deutscher Nachhaltigkeitspreis, 2018). The two cases have similar characteristics which aids the discourse analysis and validates it. They are similar in number of inhabitants and known as university cities. Both cities are in an independent location in their respective state with rural and suburban areas surrounding them. The city of Münster is located in North Rhine-Westphalia between Osnabrück and the Ruhr valley. A university city Münster is home to about 300.000 residents, 65.000 of which are students which comes to a total of 21.67%. Freiburg im Breisgau is situated in the South-West of Germany in Baden-Württemberg with a total of 230.000 inhabitants of which 10.43% or 24.000 are students.

3.2 Data collection

The *type of documents* used comes as primary data and took the form of policy documents aimed at the housing and mobility development in Münster and Freiburg. The documents need to adhere to a set of criteria to make sure this is the case. First off, each document originates in one of the cities departments and this research excludes documents from other organisation or citizen initiatives. The reason for this choice is that it allows the researcher to focus solely on identifying current and future policy approaches taken by the cities. Secondly, all documents in question are official policy documents rather than other forms of documents like information material. The document choice was made to maintain a clear focus. Lastly, this research looks at the newest version of policy and not at how it developed over time. This is done because it would go beyond the scope of this research and since the concepts of green growth and post-growth are not yet old enough to make a historical analysis viable.

As a first step to identify the *document sources*, the researcher looks at the websites of the municipal offices that are responsible for housing and mobility respectively to gain an overview of the main policies in place. Following this, the *data collection* took place by downloading identified policy documents either via links found on the websites or using the council information system (Ratsinformationssystem). This online database has all official policy documents available to download and exists for every city in Germany. After the initial search, through the use of external websites it is ensured that no important policy documents are missed. For the housing sector, this happens via the websites of renter associations and for the mobility sector via the websites of the German traffic club (VCD) and bicycle club (ADFC). Missing documents were located and added to the

selection. Based on the policy documents identified a database was created which is depicted in table 1.

City	Sector	Government office	Year	Policy document
Münster	Housing	Office for City Development, City Planning, and Traffic Planning	2014	Action Concept Living
Münster	Mobility	Office for City Development, City Planning, and Traffic Planning	2016	Cycling Concept – Münster 2025
Münster	Mobility	Office for City Development, City Planning, and Traffic Planning	2016	3. Public Transport Plan
Münster	Both	Office for Green Spaces, Environment and Sustainability	2017	Münster Climate Protection 2050
Freiburg	Housing	Department for Affordable Housing	2019	Affordable Housing 2030
Freiburg	Mobility	Office for Gardening and Civil Engineering	2008	Traffic Development Plan 2020
Freiburg	Mobility	Office for Gardening and Civil Engineering	2013	Cycling Concept 2020
Freiburg	Mobility	Office for Gardening and Civil Engineering	2018	Electric Mobility Concept
Freiburg	Both	Environmental Protection Agency	2019	Update of ‘Climate Protection Concept 2018’

Table 1 - Policy document database

3.3 Data analysis

The data analysis tool for this research is a critical discourse analysis. The literature review introduced the two conflicting discourses, namely green growth, and post-growth ideas. This discourse analysis follows the framework introduced by Fairclough in the late 1990s, looking at the three dimensions of *social practice*, *discursive practice*, and *text analysis* (Fairclough, 1992). Firstly, the *social practice* dimension looks at the discourse studied in relation to wider power structures and ideologies. Next, vocabulary, grammar, and argument structures used in the objects of analysis are considered in the *text analysis* dimension. Lastly, the *discursive practice* analyses looks at the farming of policy texts, for example how pieces of text link with other debates and the context in which statements are made. The theoretical framework addresses the *social practice* dimension, as it gives an overview on the ideology and discourse behind the green growth, and post-growth debate. The following two paragraphs outline the other two dimensions of this analysis.

3.3.1 Text analysis

The *text analysis* builds upon Foucault’s (1984) notion of *problematization* that considers problems that are addressed by policy making, in the case of this paper the problem of climate change. Said problems are argued to be social constructs that are interpreted differently by different actors rather than being considered objective features. Because of this there are different solutions proposed depending on the *problematization* of the subject discussed, green growth, or post-growth approaches in this case. According to Fairclough and Fairclough this problem-solution relationship is widely acknowledged but not yet sufficiently analysed (2015). They argue that to better understand

the relationship, researchers should look at practical arguments in their *text analysis*. According to Fairclough and Fairclough practical arguments have several elements, these include a Value premise, a Goal premise, a Circumstantial premise, and a Means-Goal premise (2015). The current situation or in other words the problem is described by the Circumstantial premise whereas the Goal premise describes the desired future condition. The Value premise is constituted through norms and values underlying the interplay between current and desired condition. Lastly, the Means-Goal premise is conditional and stands for the action that needs to be taken to move from the problem to the desired condition while considering norms and values. The Practical Claim (or conclusion) pushes for the interplay of all premises to reach the solution to the Circumstantial premise. Practical arguments in policy documents that are part of the research were analysed based on the use of described premises in relation to the two primary discourses. An example of a Value premise in the context of post-growth is a focus on the value of sufficiency in the analysed policy documents.

3.3.2 Discursive practice

Following Foucault, the *discursive unity* of this research are the policy documents of the database in table 1 (1972, p. 23). A collection of texts that are part of the same discourse defines what a *discursive unity* is. The focus on policy documents limits the analysis of the *discursive practice* in this research. The reason for this is, that finished documents are analysed rather than sources leading up to the writing of said policies. Analysing *discursive practice* also links to the concept of intertextuality, however. This concept is important to consider because it allows for a better understanding of discourses as it is defined as the identification of linkages between different texts (Mills, Durepos and Wiebe, 2012). The discussion shows the intertextuality of the policy documents as it points out similarities and differences.

3.4 Limitations and ethics

Foucauldian ideas build the bases for the analysis in this research and such a social constructionist world view has implication for how objective the research can be. As a result, any conclusions drawn from the analysis are constructed based on the world view of the researcher. Critical discourse analysis as a method has been criticised for this exact reason (Mills, Durepos and Wiebe, 2012). Since researchers express their own views and act as a critical entity rather than a neutral observer. This critical focus on the societal issue at hand aims at political intervention and instigating potential societal change.

One could argue that solely analysing policy documents by policy makers lacks validity of the research. The aim of this research is not to paint a holistic picture of the green growth versus post-growth debate of the German planning field. For this, post-growth ideas are not yet considered by enough actors. This research therefore follows the goal to find out what can be learned from two example cases that are considered frontrunners in terms of sustainable development. Can post-growth ideas be found in contemporary policy or lies the focus primarily on green growth?

This research is limited by the recency of the policy documents in question. The core mobility concept of the city of Freiburg is from the year 2008 and currently a new so-called 'Climate Mobility Plan' is drawn up (Freiburg im Breisgau, 2022). Similarly, the city of Münster is working on the 'Masterplan Mobility Münster 2035+' that aims at combining all mobility related policies of the city in one core document (Stadt Münster, 2022). Here, the policy documents discussing mobility are more recent from the year 2016. These are not in form of one coherent policy document but rather two

separate ones looking at biking and public transport policy. The fact that in the coming year there are new policies leading in the mobility sector in both cities does limit some of the strength of the results of this research. Nonetheless, it allows the reader to understand the underlying values and ideas present in the two cities and could potentially inform policymakers when drawing up the new plans on what they can learn from past policy. Furthermore, it will be possible to draw new insights from the new mobility concepts in the coming years.

Chapter 4: Analysis

The analysis first looks at green growth and post-growth discourses in the housing and mobility policies of the two individual cities separately. Relevant policy documents are dissected using the *text analysis* method outlined in the previous chapter. By doing so, the following two sub-questions are answered:

What green growth and post-growth discourses are used in housing and mobility policies in the city of Münster?

What green growth and post-growth discourses are used in housing and mobility policies in the city of Freiburg?

Following this, the analysis discusses the prevalent discourses in the two cities and both planning domains by analysing the *discursive practice*. The findings of the *text analysis* as well as the *discursive practice* are compared to find similarities and differences. This answers the final sub-question:

How are the green growth and post-growth discourses found in the housing and mobility policies of Münster, and Freiburg different and/or similar?

In section 4.1 the discourses in the context of Münster are outlined, followed by the Freiburg discourses in section 4.2, and the comparison of the two cities in the discussion in section 4.3.

4.1 Discourse analysis Münster

4.1.1 Case description

The case of the city of Münster is analysed based on a total of four documents. The housing policy discourse is discussed in the 'Action Concept Housing' (Handlungskonzept Wohnen). Next to this, two documents are the guiding instruments for mobility policy with one being the city's cycling concept (Radverkehrskonzept), and one the 'Local Transport Concept' (Nahverkehrskonzept). Lastly, how both discourses can play a role in reducing emissions and energy consumption is considered in the document 'Münster Climate Protection 2050' (Münster Klimaschutz 2050). Münster is part of the 'Masterplan 100% Climate Protection' programme by the federal ministry for economics and climate protection together with other role model municipalities throughout Germany. With the overall goal to reduce their emissions by 95% and energy consumption by 50% by 2050:

"By 2050, final energy consumption is to be reduced by 50% and greenhouse gas emissions by 95%." (p.8, Münster Climate Protection 2050)

To reach these goals, the document 'Münster Climate Protection 2050' was created as a follow-up to the previous 'Climate Protection Concept 2020 (Klimaschutzkonzept 2020).

The housing discourse in the city is dominated by an inherent lack of housing. Prices have increased drastically as a result of the high demand and lower-income households are unable to pay rents in

the inner city. This combines with shrinking household sizes, “an average household in Münster made up of less than two people - statistically about 1.8” (p.7, Action Concept Living), which puts additional pressure on the housing stock. There is a strong narrative that discusses the lack of housing on the one hand, and the need to create a climate neutral housing stock on the other. An important factor influencing heating energy consumption plays the average floor size which lies at 42 square metre per person, “in a similar order of magnitude as the national German average” (p. 57, Münster Climate Protection 2050). Münster has a “homogeneous typology of the building stock” (p.28) with 85% being single-family homes and about 15% being multi-family homes. A further point of interest is the age, with about 70% of housing units built before the year 1979.

In contrast to the housing discourse, the mobility discourse has a more positive connotation both with regards to sustainability as well as user satisfaction. User satisfaction for public transport and the use of the bicycle is high in Münster which shows in high rankings at the ‘Public transport Customer Barometer’ as well as the ‘ADFC Bicycle Climate Test’:

“Since 2005, the evaluation of satisfaction with the Münster city bus system has been well above the industry average.” (p.51-52, 3. Public Transport Plan)

“Since the introduction of the ADFC Bicycle Climate Test in 1991, Münster has taken the top position among municipalities with more than 200,000 inhabitants five times in a row.” (p.2, Cycling Concept – Münster 2025)

Looking at, what the city deems, “environmentally friendly means of transport”, a large share of around 70% of daily trips are done by public transport and active travel:

“For about 70% of all journeys in Münster (with 400,000 journeys per day) the inhabitants use environmentally friendly means of transport such as bicycle, bus and train or walk.” (p.35, Münster Climate Protection 2050)

Despite this positive connotation, there is room for improvement according to the city. Two primary points of criticism the bus network receives are linked to “punctuality, and information in the event of failure” (p.51, 3. Public Transport Plan). Furthermore, the current cycling infrastructure is described as “outdated in terms of dimensioning and condition” (p.1, Cycling Concept – Münster 2025). Adding to this, is a proportionately large size at 7th place for all German cities compared to the number of inhabitants of the city. This has an effect on the mobility patterns as longer distances need to be travelled and results in “360.000 commuter trips every day” (p.75, Münster Climate Protection 2050). Longer distances travelled have a large effect on the mode of transport chosen. As an example, only 20% of commuter trips are done by public transport and “80% of which are covered by car” (p.75, Münster Climate Protection 2050).

Sufficiency – not only a value premise

One of the core values underlying the document ‘Münster Climate Protection 2050’ is the concept of sufficiency. The idea of reducing current consumption by changing ones behaviour is not only a value premise voiced by the city of Münster. At the same time it functions as a Means-goal premise and a Goal premise simultaneously. This is the case because the concept can be understood as the desired outcome, being the reduction in energy, and resource consumption, as well as the way to get to the desired outcome through actively changing ones behaviour. This shows in the following text passage taken from the ‘Münster Climate Protection 2050’ document:

“An important, cross-sectoral focus of the master plan lies in the area of changing the lifestyles of the citizens of Münster towards sufficient, climate-friendly behaviour. [...] the goals of the master plan can only be achieved if sufficiency potential can be extensively raised.” (p.16)

Later in the policy they double down on this Means-goal premise by pointing out: “Sufficiency is an important pillar for the absolute reduction and limitation of energy and resource consumption” (p.52). The sufficiency strategy formulated in the document has one clear Goal premise, that is to “formulate [...] recommendations for municipal activities with the aim of making it easier for the citizens of Münster to make climate-friendly decisions” (p.16). It, in other words, aims to make climate-friendly decisions for residents increasingly easier and therefore more likely to be chosen over the status quo. The fact that this sufficiency strategy exists in policy is an important step since research has argued that this might be hard to accomplish (Jungell-Michelsson and Heikkurinen, 2022).

Cross-sectoral focus as Value premise

Another important value discussed by the city of Münster is the need for a cross-sectoral focus in the attempt to reach climate neutrality by 2050. This value can, for example, be observed in the development of neighbourhoods. Here, the city argues that different fields of expertise need to be considered simultaneously to reach their climate goals.

“An integrated view at district level is recommended - climate protection, housing, energy supply, mobility and local supply must be considered together” (p.15, Münster Climate Protection 2050)

4.1.2 Housing discourse

Energy efficiency measures and refurbishment of existing housing stock

An important discourse in the housing sector is the energy efficiency of the housing stock, both existing and to be built. Münster is expected to see an increased growth in residents, this combined with an already existing general lack in housing results in the need to add housing units to the current stock. As mentioned in the ‘Münster Climate Protection 2050’, “the final energy consumption of private households is particularly determined by the energetic quality of the building stock” (p.51-52, Münster Climate Protection 2050). The Goal premises of Münster are twofold, on the one hand: “The refurbishment rate must be increased from currently just under 1% to up to 3% in 2050” (p.9, Münster Climate Protection 2050), and on the other hand: “Consistently high energy standards must continue to be implemented in new buildings” (p.15, Münster Climate Protection 2050). Research found that policy approaches aiming to develop a climate neutral housing stock, should focus on refurbishing old buildings, provide access to information, and give economic incentives in order to be successful (Cabrera Serrenho *et al.*, 2019; Nair, Gustavsson and Mahapatra, 2010). The Means-goal premise of the city focuses on these factors and adds an additional approach in best-practice projects:

“Particular attention must be paid to improved financing options, to communication and advice, and in particular to the visible implementation of best-practice projects in the portfolio.” (p.14, Münster Climate Protection 2050)

Using visible best-practice projects in the city to is to be combined with a role model function for the city’s own housing stock: “As the owner and user of its properties, the city of Münster has great potential for action” (p.15, Münster Climate Protection 2050). This role model function shows residents what is possible when developing climate neutral buildings and the city is sending a strong

signal by stepping up themselves. Not only do they refurbish their own housing stock but in addition to this, Münster focuses on giving out advice for energy efficient refurbishments of the existing stock. For this, the goal of at least 2000 consultation per year was decided upon. Economic incentives are visible in the municipal subsidy program because of which “70-80 refurbishments or partial refurbishments [are] carried out per year” (p.11, Münster Climate Protection 2050). Not only a focus on individual houses is taken in Münster but also one that looks at the neighbourhood as a whole. This allows for a more efficient and successful refurbishment of the existing stock as neighbourhoods in Münster are oftentimes similar in age, building type, and standards.

“Neighbourhoods in terms of energy-efficiency refurbishment are urban areas that are comparatively homogeneous in terms of their age, building fabric, and technical equipment and have a comparable need for refurbishment and a similar potential for energy savings” (p.133, Münster Climate Protection 2050)

A further goal premise of this neighbourhood-wide approach is to combine efforts in the improvement of the housing stock with other areas in the planning domain. This can mean that the surroundings are improved in terms of mobility and facilities. These ideas are linked to the concept of the “compact city” (“Stadt der kurzen Wege”) which is further discussed in the mobility discourse analysis in the previous section.

Reducing floor space as a potential sufficiency strategy

Research has shown that reducing the per capita floor space used, can significantly reduce energy use (Bohnenberger, 2021; Lorek and Spangenberg, 2019; Sandberg, 2018). In line with these findings, the city of Münster set out the goal to “develop space-saving housing models with the same quality of living” in order to “reduce per capita space consumption and reverse the long-term trend towards more living space” (p. 15, Münster Climate Protection 2050). The Goal premise of the city to reduce floor space, therefore links with literature findings. A complicating factor is that “the number of single-person households is increasing” (p.7, Action Concept Living). The reason for this is that in Germany there are primarily three to four room apartments on the rental market which results in above average floor space inhabited by a single person (Lorek and Spangenberg, 2019). This does not only put pressure on reaching climate neutrality by 2050 but at the same time further escalates the housing shortage as more housing is needed to accommodate the increase in single-person households:

“As a result, new housing must be built – even without new people moving to Münster from elsewhere – in order to be able to provide housing for the growing number of households” (p.7, Action Concept Living)

The discourse of reducing floor space, as outlined in the policy documents, is addressed through fairly limited Means-goal premises. In other words, the problem is clearly stated as a problem that needs to be addressed but there are minimal proposed solutions. A short sentence argues: “Space-saving construction measures can be achieved, for example, by densifying existing buildings through annexes, and shared common areas.” (p.57, Münster Climate Protection 2050). It is interesting that the option to choose to live with less space or to construct new developments with lower per person floor space is not mentioned in any of the documents. This shows a limited willingness to promote substantial changes which shows again in the half-hearted hope, phrased in the ‘Münster Climate Protection 2050’ that trends towards shared living that are growing throughout Germany might address the problem:

“Slowly growing, nationwide trends towards communal forms of living accommodate these approaches in the medium term” (p.131, Münster Climate Protection 2050).

Inequality in social housing

Linked to the lack of housing narrative is the decline in social housing units in the city. Combined with a large increase in rents due to the high demand, this leads to processes of displacement and with it gentrification. This becomes noticeable looking at two the Circumstantial premises, namely:

“Due to the tense housing market situation, displacement effects can currently be observed, especially with regard to low-income households” (p.17, Action Concept Living)

“The main reason for the high price level is the scarcity of housing in relation to the demand” (p.17, Action Concept Living)

As mentioned previously, the overall goal is to create sufficient housing to support the continued growth of the city which is predicted to take place over the coming years. To achieve this, “the goal is to subsidise the construction of 300 new rental apartments [per year], and to take advantage of other opportunities to retain rental price and occupancy restrictions in the portfolio.” (p. 19, Action Concept Living). This is to be done by regulating the number of social housing units in newly developed multi-family houses. This is part of the Münster model of ‘Socially just use of land’ (Münsteraner Modell der sozialgerechten Bodennutzung). This model follows two primary ideas of a property strategic approach and to get private property owners to help in achieving housing and social policy goals.

“On the one hand, a property strategic approach, and on the other hand, the participation of private property owners in the achievement of housing and social policy goals” (p. 26, Action Concept Living)

The property strategic approach implies that the city continuously acquires building land in the city to achieve their goals. In areas not belonging to the city, investors are forced to develop at least 30-60% of units in multi-family houses as social housing depending on the location of construction.

Furthermore, the city of Münster argues that with an increase in the general housing stock, the problem of social housing can be partly addressed. This shows in some of the arguments given, for example “a high level of new construction is therefore the most effective means of preserving inexpensive housing stock in Münster in addition to the construction of new subsidised rental apartments” (p. 19, Action Concept Living), as well as “inexpensive living space is consequently also obtained through the ageing of the housing stock, and, conversely, is reduced when old building stocks are upgraded through comprehensive refurbishment” (p. 19, Action Concept Living). The argument that housing for lower income residents is obtained through old housing stock that is not refurbished stands in contrast with climate ambitions outlined in the previous sections. If climate neutrality is to be achieved through refurbishment of the existing housing stock in combination with energy efficient new housing developments, the social housing stock will most likely further decline.

Several text passages highlight the Goal premise of focussing on families in housing developments, “consideration of family friendly aspects” (p. 20, Action Concept Living), or “strengthen Münster as a housing location for families” (p.20, Action Concept Living) as two examples. A Value premise, strengthening the family focus, is linked to a focus on growth of the housing stock and partly in contrast to their social goals, neglects less wealthy residents in need for social housing.

“In this way, they [higher income households] ensure that demanding new housing developments, and refurbishments can also be carried out and thus contribute to the rejuvenation of the housing stock. In order to keep this wealthy clientele in the city, an attractive supply of building land for spacious single-family homes must also be made available.” (p. 14, Action Concept Living)

The social housing situation in Münster shows two contrasting discourses. While the city clearly understands the need to increase the supply of social housing, there is simultaneously a strong focus on keeping the city attractive for families and more wealthy residents.

4.1.3 Mobility discourse

As mentioned previously, the active travel and public transport discourse is positively portrayed by the city of Münster with a large share of daily trips done with these modes of transport but there are complications that the city of Münster aims to address. In the following, this section first considers Value premises underlying the mobility discourse presented in the core policies. Next, Means-goal premises that aim at reaching climate mitigation goals are discussed, adding to core values.

Values

The primary value of the mobility discourse is threefold. Following the ‘Avoid-Shift-Improve’ concept outlined in the theoretical framework, the focus lies on ‘traffic avoidance’, a ‘modal shift’ away from the conventional car towards more sustainable modes of transport, and an ‘efficiency increase’ towards electric cars. While the literature argues that these three focuses should be prioritised in named order (Kagermeier, 1998), this is not highlighted in-text.

A Value-premise of the cycling concept discussed is of economic nature, as “by substituting car (commuter) traffic, considerable costs can be saved in road construction in the medium term.” (p.14, Cycling Concept – Münster 2025). The text shortly goes back to climate and health centric values, pointing out that it can have positive effects on both. Only to highlight that it not only benefits the city economically, but also the individual and society in particular. This is based on a Danish study that calculated the costs/savings that result from different modes of transport for the individual and society respectively. This study shows that cycling kilometres cost 8 cents whereas driving a kilometre by car costs up to 50 cents. Society as a whole even saves 16 cents per kilometre cycling while car use costs 15 cents.

“Each kilometre cycled costs [the individual] only 8 cents, while each kilometre travelled by car costs an average of 50 cents.”,

“Society saves 16 cents per person for every kilometre cycled, every kilometre travelled by car costs society 15 cents.” (p.14, Cycling Concept- Münster 2025)

A reason for this clear economic focus is that the cycling concept can only be realised if “financial resources are available for this” (p.14, Cycling Concept – Münster 2025). Thus, the city is not necessarily focused on financial gains but limited by their available funds. This shows in the underlying values mentioned in the introduction of the cycling concept, namely meeting climate neutrality targets, and reducing the number of accidents. Furthermore, this argumentation can be seen as an attempt to justify investments into the city’s cycling infrastructure towards residents that are not yet convinced by the bicycle as a mode of transport. This is supported by the comparison of the costs produced by the conventional car versus the bicycle, clearly pointing out the benefits of the latter.

Traffic avoidance narrative

The main Value premise with regards to the reduction of overall traffic is that of cross-sectoral policy making: “The reduction in transport demand can be achieved through various measures, from spatial planning strategies and the promotion of regional economic cycles to facilitating work in the home office” (p.76, Münster Climate Protection 2050). One can observe that in order to reduce overall traffic, mobility developments are not the focus but rather changes in other areas like the housing sector, and economic developments. The city of Münster aims to create a “Stadt der kurzen Wege” or “compact city” (p.76) through changes in these fields.

Active travel and public transport as a Means-goal premise

The discourse of reducing energy consumption and greenhouse gas emissions in the mobility sector was, in a number of text passages, linked to an increase in active travel and public transport as a Means-goal premise. In other words the goal is to shift travel away from the conventional car towards other options. These modes of transport are seen as vital to reduce emissions and reach the goals of the ‘Münster Climate Protection 2050’ document. Before these Means-goal premises are analysed in more detail, the fact that the current bus fleet in Münster does not have access to electric powered buses needs to be pointed out. A switch to electric buses is argued to be “desirable” (p.93, 3. Public Transport Plan) but apart from that, not yet part of the public transport discourse. This is important since it means that diesel-powered buses with locally harmful emissions are used. Still the city considers public transport as an “environmentally friendly mode of transport” (p.35, Münster Climate Protection 2050). Whereas the literature agrees that buses are more sustainable than the use of the conventional car because of the higher number of passengers, the use of diesel-powered buses cannot be argued to be void of any emissions (Bakker and Konings, 2018).

The following statement captures the need to improve the biking infrastructure and links to the great potential of incentivising commuters to switch their mode of transport which will be further explored in one of the next paragraphs. An increase in the uptake of e-bikes is linked to further distances travelled by this mode of transport and infrastructure improvements are deemed to be important to make this possible.

“Against the background of the increase in cycling distances due to the increasing use of e-bikes and pedelecs, improving the quality of everyday routes is an important prerequisite for promoting the switch from cars to bicycles for both urban society and the population in the surrounding communities” (p. 9, Cycling Concept- Münster 2025)

Studies from around the world unanimously point out the important role high quality biking infrastructure plays in promoting cycling (Goodman *et al.*, 2014; Keall *et al.*, 2018; Neves and Brand, 2019). Research and Münster’s Goal premise align in making the use of the bicycle more attractive to residents in order to shift the mode of transport away from using the conventional car. In addition to this, the city aims at increasing the actual physical space used for the bicycle and decrease it for the conventional car. This takes the form of “considering the street as a traffic and recreation area” (p.5, Cycling Concept – Münster 2025) and therefore reducing space for “stationary motor vehicle traffic” (p.5). This means that space currently used for parking could be turned into bicycle lanes to improve the connectivity between different parts of the city.

Next to improving the biking infrastructure, there is one primary aspect of the public transport quality that residents see as problematic which is the punctuality of services.

“There is a large gap between the quality received and the quality expected for the parameter “punctuality”, which has the highest weighting. Customers expect a maximum delay of 2 to 3 minutes, but perceive delays of up to 5 minutes on average.” (p.54, 3. Public Transport Plan)

In the literature punctuality, an aspect of service quality, is argued to be an important point of consideration for policymakers when there is the wish to increase public transport uptake (Carroll, Caulfield and Ahern, 2019; Redman *et al.*, 2013). These findings are supported by residents’ views, ranking punctuality among the most important aspects of the service quality check. The Means-goal premise here is “to achieve cooperation between the transport company, and urban traffic planning and traffic control.” (p.53, 3. Public Transport Plan). Interesting here is the fact that the policy document was written by both the transport company in question as well as the city’s traffic planning office. Making this argument somewhat obsolete and vacuous.

Multi-modal travel

In order to shift the mode of transport choice away from the conventional car, the focus also lies on multi-modal forms of transport. This entails that individuals use different modes of transportation depending on the destination they have, and even combine different modes effectively to reach these. According to the Stadtwerke Münster, this new approach can significantly reduce air pollution, emissions, and land consumption.

“[...] make an important contribution to air pollution control in Münster as well as to the reduction of CO2 emissions, and the reduction of land consumption” (p.40, 3. Public Transport Plan)

Research has shown that increased public transport accessibility positively influences active travel behaviour (Cui, Mishra and Welch, 2014; Frank *et al.*, 2010), boosting the potential of multi-modal travel. The city aims at strengthening this specific link by enhancing the interplay between the bus and the bicycle by increasing bicycle parking at public transport stops.

“The early planning of the bicycle as a feeder to public transport and the provision of the corresponding stops with bicycle parking facilities promotes the coexistence of bicycles and buses” (p.41, 3. Public Transport Plan)

In addition, the “introduction of the folding bike subscription in 2013, which makes it much easier to take a bike on the bus” (p.41, 3. Public Transport Plan), further increase the interplay between these two modes of transport. The more typical modal combination of walking to bus stops is supported by the “currently offered standard of a 300 metre radius” (p.54, 3. Public Transport Plan) at which residents have access to bus stops in the city. In addition to linking biking and public transport, there is also an attempt to promote the use of carsharing. This is to be accomplished by making it possible to access carsharing vehicles with the public transport user card. “Alternative climate-neutral sharing concepts are gradually being given more space” (p.15, Münster Climate Protection 2050), signalling the aim of the city to potentially attempt at making carsharing climate neutral.

Commuters

A large number of people commute to Münster every day from the surrounding villages and small towns. The higher the distance away from the destination, the more people use their private car over more sustainable modes of transport. The city of Münster wants to change this by incentivising the use of the bicycle or e-bike.

“To persuade commuters in particular to switch from cars to (electric) bicycles.” (p.5, Cycling Concept- Münster 2025)

In order to accomplish this, investments into the cycling infrastructure are needed to make it more attractive for commuters to use their (e-)bike. The primary Means-goal premise mentioned in the text is “the establishment of city-regional cycle routes” which is seen as a “significant addition to the cycling infrastructure” (p.9, Cycling Concept – Münster 2025). A total of 13 of these routes will connect the surrounding municipalities with the inner city. The focus lies on reduced travel time, this is achieved through a focus on “reduction of waiting time” (p.9, Cycling Concept – Münster 2025). This allows the user to make to their designated destination quicker. Adding to the installation of the city-regional cycling routes, a focus on additional infrastructure improvements for commuters is present. An examples of this is to “further develop options for taking bicycles on buses and trains” (p.12, Cycling Concept – Münster 2025) through “attractive bicycle parking facilities at train stops” (p.15, Cycling Concept – Münster 2025). Another important point is the need for charging stations for e-bikes at the workplace: “The city administration should therefore set a good example to change this” (p.13, Cycling Concept – Münster 2025). This further increases the range at which people can commute into the city using alternative modes of transport to the private car and will in turn play a role in achieving climate neutral transport.

About making conventional car use electric

The third underlying Value premise focuses on improving the efficiency of individual motorised travel. This is put in writing through the following Goal premise of completely switching to electric vehicles by the year 2050.

“The goal for the remaining motorized private transport is to convert 100% to electromobility using regenerative power sources by 2050.” (p.9, Münster Climate Protection 2050)

This long-term goal is backed up by literature which shows that once all electricity is based on renewables and construction emissions are lowered, EVs have a large potential to help in reaching climate neutrality (Ma *et al.*, 2012). The city aims at “the increased expansion of locally and regionally generated renewable electricity” (p.16, Münster Climate Protection 2050) to make this a reality. A further Means-goal premise is the “role model function of the Münster city administration” (p.16), where they aim to include EVs in their own fleet. Overall, a much bigger focus on shifting to more sustainable modes of transport can be observed than on improving the status quo through technological innovation.

4.1.4 Preliminary conclusions Münster

This section answers the sub-question: *What green growth and post-growth discourses are used in housing and mobility policies in the city of Münster?*

Underlying both housing and mobility policies is the core Value premise of sufficiency which is newly added to the ‘Münster Climate Protection 2050’ document. Until now, this has not been translated into the housing and mobility discourse sufficiently. It is only formulated as a Goal premise with little consideration for its implementation into practice so far.

Due to a lack in housing for its residents, increasing the current housing stock is seen as the main priority in the housing discourse of the city. In the last years there was a decline in social housing due to special rent contracts running out that were not extended. With regards to prioritisation of certain

resident groups, despite a lack in social housing, the focus lies not only on the more vulnerable parts of the population. Also, wealthy residents and families are considered with the reason given that benefits will trickle down to less fortunate residents. Furthermore, housing policies in Münster acknowledge the need of reducing per capita floor space but does not take an active role in this. This shows in the city not aiming to build housing with smaller per capita floor space even though many housing developments take place due to the lack of housing. Next to this, the existing housing stock is to be refurbished by making buildings more energy efficient. These improvements are incentivised by subsidies, communicating possibilities for the residents, and through the role model function of the city, which aims to improve their own buildings as soon as possible.

The mobility discourse is strongly focused on shifting modes of transport away from conventional car use towards sustainable alternatives, namely active travel, and public transport. This is to be achieved through improved connectivity of the different sustainable forms of transport. By, for example, installing bike parking facilities at all bus stops in the city. Special emphasis goes towards commuters because the city sees large potential here to incentivise residents to stop using motorised individual travel. Improvements in biking infrastructure aim to increase the share of commuters talking their bicycle to work. Next to shifting modes of transport, a Goal premise of Münster is to reduce the need for overall traffic through short distances. The main Mean-goal premise that aims at achieving this, focuses on the compact city concept but does not see much focus on the actual implementation. Lastly, a long-term Goal premise of the city for the remaining traffic is to fully switch to electric vehicles using renewable energy by the year 2050. The city incentivises residents to switch to electric vehicles by adopting the technology in their own fleet.

Table 2 depicts the different policy approaches of the city of Münster and whether a link to ideas of the post-growth or green growth discourses can be observed. In conclusion, housing policies in Münster show Goal premises that can be linked to ideas of the post-growth discourse in the form of support for low-income households and reducing per capita floor space, but this is not translated into action. Next to this, approaches that can be clearly linked to ideas associated with the green growth discourse dominate, growth in housing developments, refurbishment through innovation, and focusing on wealthy residents and families. In the mobility discourse the clear focus lies on shifting modes of transport away from the conventional car which is an approach that aims at changing the behaviour of Münster’s residents. By achieving this goal, overall growth of unsustainable forms of transport is reduced which links to ideas of the post-growth discourse. Incentivising its residents to buy electric vehicles by adopting these vehicles in their own fleet supports green growth ideas however, as this aims at making the continued use of individual car use compatible with environmental impacts.

SECTOR	POLICY	PREMISE	PRIMARY DIRECTION
HOUSING	Develop space-saving housing models	Goal	Post-growth
	Energy efficiency standards	Means-goal	Green growth
	Refurbishment of existing housing stock	Means-goal	Green growth
	Increase in social housing provision	Means-goal	Post-growth
	Increase mid-high income family housing	Means-goal	Green growth
MOBILITY	Improve (e-)biking infrastructure	Means-goal	Post-growth
	Increase public transport service quality	Goal	Post-growth

Support of multi-modal travel	Means-goal	Post-growth
Shift towards electric mobility	Goal	Green growth

Table 2 – Policy approaches Münster

4.2 Discourse analysis Freiburg

4.2.1 Case description

In total, five policy documents of the city of Freiburg are analysed in this research. The primary document used to analyse the housing discourse is called ‘Affordable Housing 2030’ (Bezahlbares Wohnen 2030). The mobility discourse is discussed in three separate documents, namely the ‘Traffic Development Plan 2020’ (Verkehrsentwicklungsplan 2020), the ‘Cycling Concept 2020’ (Radverkehrskonzept 2020), and the ‘Electric Mobility Concept’ (Elektromobilitätskonzept). Lastly, both discourses are present in the ‘Climate Protection Concept 2018’ (Klimaschutzkonzept 2018). In this document the city of Freiburg states their goal for the following years, aiming at reducing emissions by 50% in 2030 and become climate neutral in 2050.

“In 2014, the municipal council unanimously decided to halve greenhouse gas emissions by 2030 compared to the base year 1992 and to achieve the goal of climate neutrality by 2050.” (p.13, Climate Protection Concept 2018)

Similar to the situation in Münster, the housing discourse in Freiburg is shaped by a lack of housing. “According to the analysis of housing needs from 2014, there will be a prognosis of an additional need of around 15,000 apartments by 2030” (p.9, Affordable Housing 2030) that need to be built by the city. The clear focus lies on creating affordable housing for residents as the name of the leading policy document suggests. Currently, “the proportion of apartments subsidized with state funds is around 3,200 apartments” (p.8, Affordable Housing 2030) with 1599 low-income households still looking for housing. Furthermore, an important consideration is the growing per capita floor space used by residents of the city, as it has grown “from around 38m² to 42m²” (p.44, Climate Protection Concept 2018) in recent years. Next to this, cooperative housing projects play a large role in creating affordable housing in the city.

In addition to Freiburg's urban development and private housing companies, cooperative housing projects also play an important role on the Freiburg housing market. (p.8, Affordable Housing 2030)

This form of living is focused on maximising the efficiency of housing space used rather than making profits and each member of the cooperative has a vote in decisions made.

“Freiburg sees itself as a bicycle city.” (p.13, Cycling Concept 2020)

The Circumstantial premise underlying the mobility discourse in Freiburg is a strong focus on the bicycle. The city wants the bicycle to be the primary mode of transport and with a rise in the “share of bicycle traffic on journeys within the city between 1982 and 1999 from 15% to 27%” (p.13, Cycling Concept 2020) it did become a lot more prominent at the turn of the century. At the same time, some residents show a “lack of ecological awareness and the 'love for the tried and tested combustion engine'” (p.61, Electric Mobility Concept) which shows in the number of motorised individual vehicles purchased in the city. This has grown significantly since 1997, especially in recent years.

“Since 1997, the number of cars has increased by 16,131, which corresponds to an average of 768 new cars registered each year. There has been a significant increase in new car registrations in recent years. In 2017 there were 1,291 and in 2018 even 1,319 newly registered cars.” (p.41, Electric Mobility Concept)

This trend is picked up in the ‘Climate Protection Concept 2018’ stating that “the willingness of people to give up their cars [...] is currently still too low” (p.15). Nonetheless, the city has an attractive light rail and bus network, and good cycling and walking infrastructure. Through these three modes of transport, the goal is that “68% of the trips within Freiburg are completed with these three modes of transport together, the so-called environmental network” (p.13, Cycling Concept 2020). The following statement perfectly summarises the current challenge of the mobility discourse:

The specific choice of mode of transport thus moves in the field of tension between maintaining “well-worn” behaviour on the one hand and a conscious choice of mode of transport on the other. (p.131, Traffic Development Plan 2020)

The city faces the challenge to convince its residents of the more sustainable mode of transport over what they are used to.

Value premises of the Compact city

The compact city concept is an important Value premise underlying the housing discourse in the city of Freiburg. Apart from benefits for the mobility sector which are discussed in a later section, this concept aims at increasing liveability, and having social benefits. The goal premise of the city is focused on implementing the compact city concept.

“Newer quarters and districts are again oriented towards the compact, mixed-use city that has shaped many inner cities since the Middle Ages and made them worth living in.” (p18, Affordable Housing 2030)

Core values of this approach are “social mixing and a mix in functions” (p.18, Wohnen) which is made possible through different apartment types and sizes, and a high residential density.

5.2.2 Housing discourse

Refurbishment of the existing housing stock increases energy efficiency

In order to reduce the amount of heating energy used in housing it is vital that the existing housing stock is refurbished (Cabrera Serrenho *et al.*, 2019). The city of Freiburg aims at “refurbishment based on high energy standards” (p.45, Affordable Housing 2030). This combined with a “refurbishment rate of around 1.5% by 2020, rising to 2.2% by 2030” (p.46, Climate Protection Concept 2018), would have a large positive impact on the energy consumption of the housing sector. Incentives are primarily economic in the form of subsidies, and long-term rent stabilisation.

“The city of Freiburg grants the highest possible funding for appropriate building modernisations. This is linked to a long-term rent and occupancy commitment, which ensures that the living space remains affordable even after the renovation.” (p.46, Affordable Housing 2030)

This Means-goal premise shows how the city aims at making the refurbishment of privately owned housing units attractive to its residents. In addition to direct financial incentives from the municipality, there is an approach by the Environmental Protection Agency to “take into account the energetic condition of the building in the new rent index” (p.122, Climate Protection Concept 2018). Both approaches show the commitment towards ensuring that processes of gentrification are

avoided when refurbishing older buildings. Next to increasing the energy efficiency of older buildings, there is potential in behavioural changes of residents: “By changing the behaviour of users in unrenovated buildings, an additional reduction in energy requirements of ten percent is achieved.” (p.46, Climate Protection Concept 2018). This type of measure is termed ‘non-investment measure’ in the literature and offers the potential of immediate reduction in energy use prior to refurbishment action that can take longer (Nair, Gustavsson and Mahapatra, 2010).

Shared living as a Means-Goal premise to reduce floor space

Reducing the amount of per capita floor space used is argued to play a significant role in making buildings more sustainable because of reduced energy requirements for heating purposes specifically (Bohnenberger, 2021; Lorek and Spangenberg, 2019; Sandberg, 2018). The city of Freiburg aims to address with the formulation of the Goal premise of supporting sustainable types of living.

“Promotion of sustainable building typologies, e.g. square meter consumption per person, ‘sharing’ concepts, etc.” (p.35, Affordable Housing 2030)

Already now “communal living has spread” (p.95, Climate Protection Concept 2018) with housing cooperatives that “offer micro-apartments in connection with common rooms” (p.41, Affordable Housing 2030). These common rooms are said to “promote encounters with the residents and thus social integration” (p.41, Affordable Housing 2030). The city values these developments as the shared common rooms reduce overall floor space leading to more sustainable forms of living. Their support of these projects is formulated in the Goal premise to assist in the “promotion of community housing projects (e.g. cooperatives, apartment building syndicate, building groups)” (p.34, Affordable Housing 2030). To achieve this the Means-goal premise of giving these forms of living special consideration is identified.

“Cooperative living should be given special consideration when creating marketing concepts and allocating land.” (p.56, Affordable Housing 2030)

Through this prioritisation, the city shows its commitment to cooperative living over more economically viable alternatives. Supporting the development alone does not boost the eventual uptake of these forms of living. To make cooperative forms of living more attractive, different groups of residents need to be considered. Students and trainees are incentivised through a “rent reduction that is linked to them helping in the household, everyday life, or in the garden” (p.62, Affordable Housing 2030). They help other, oftentimes older, residents living in the building as “cross-generational neighbourhoods, common rooms, and common infrastructure enable a carefree, sustainable life into old age” (p.95, Climate Protection Concept 2018). Making people more aware of the potential these forms of living offer, the city is planning to regularly organise a “Day of open housing projects” (p.59, Affordable Housing 2030).

“The aim of this event is to bring these living concepts closer to the citizens, to enable interested parties to exchange ideas and to establish them as an alternative form of living and building in Freiburg.” (p.59, Affordable Housing 2030)

In addition to these physical opportunities to talk about these forms of living, a digital platform exists where residents can share their experiences and find like-minded people.

More efficient use of floor space through home exchange

In Germany the size of the dwelling oftentimes does not match the needs of inhabitants (Lorek and Spangenberg, 2019). This challenge is prevalent with elderly living in large apartments after their children have moved out and young families lacking living space due to the strained housing market:

“Many families with children would like more space, while at the same time many older people live alone or in pairs in comparatively large apartments because their children have moved out in the meantime.” (p.60, Affordable Housing 2030)

The Means-goal premise of the city is to set up the possibility of home exchanges where residents living in apartments that are too large for them can swap apartments with families that are in need of more space (p.60, Wohnen). To increase the likelihood of an exchange, “incentives for senior citizens in particular” (p.60) are to be created in form of a “moving fee of 2000€” (p.60). This is needed since most of the time it is the elderly that give up living space in favour of the larger family.

Property policy approach to achieve social goals

Freiburg aims at providing sufficient housing for all members of society through their approach to properties owned by the city. This is to be achieved by not selling city-owned areas where developments can take place.

“In principle, the city of Freiburg no longer sells areas belonging to the city on which housing can be built, with the conviction to act sustainably.” (p.10, Affordable Housing 2030)

Through this active role in keeping hold of these areas, the city believes that it can “create and maintain affordable living space” (p.10, Affordable Housing 2030). This does not mean that the city is personally responsible for all new housing developments but that it retains the ground these are built on. Through this, it is possible to have a say in the type of developments taking place. The Goal premise of Freiburg is the “construction of 50% subsidised rental housing” (p.34, Affordable Housing 2030) to counteract the housing shortage in the city. These subsidised housing units have three main characteristics, namely financial support, long-term rent reduction, and is only applicable for low-income households.

“The construction of new apartments is financially supported, the rent is reduced due to the subsidy and is binding over a long period of time, and the apartment may only benefit a group of people who have a special need due to their income situation.” (p.31, Affordable Housing 2030)

Furthermore, the document points out that “small apartments can make a contribution to the creation of affordable housing” (p.40), stating rent prices to be linked to floor size as the primary reason.

5.2.3 Mobility discourse

Avoid

The core Value premise in the future mobility plans of Freiburg is the reduction of overall traffic while satisfying the needs of all members of society.

“With the same satisfaction of mobility needs, there is less traffic overall” (p.96, Climate Protection Concept 2018)

Following the Avoid-Shift-Improve concept, the primary goal of the city is to reduce the amount of traffic on the streets. To achieve this, the ‘compact city’ concept (Stadt der kurzen Wege) is to be

applied in all districts. This concept promotes high residential density combined with the availability of all functions an individual needs. Through this high availability of facilities the amount of traffic can in theory be reduced because the distances are shorter.

“The best traffic planning strategy is to avoid traffic, i.e. to significantly shorten the distances to be covered and to prevent motor vehicle journeys from occurring in the first place.” (p.97, Traffic Development Plan 2020)

Next to reducing the distances which residents need to travel to work, shops, and to get groceries, there is a second approach the city is taking to reduce the use of individual motorised travel even further. This approach aims at developing districts that promote ‘car-free living’ and ‘parking space-free living’, these entail housing where residents agree to not own a car, and housing where car parking is located in other parts of the neighbourhood respectively.

“With "car-free living", residents contractually undertake not to have their own car. Alternative solutions must be found in order to fulfil the parking space obligation according to the state building regulations.” (p.101, Traffic Development Plan 2020)

“With "parking space-free living", those who live here are allowed to own a car, but the parking spaces are not in the immediate vicinity of the apartment, but concentrated in neighbourhood garages.” (p.101)

The two statements highlight the fact that it is not easy to simply renounce their personal parking spot. This is the case because “for urban planning and legal reasons, parking spaces must still be provided for all residential units” (p.95, Traffic Development Plan 2020). Both approaches are constraint by these legal prerequisites, though ‘parking space-free living’ is easier to realise, especially in newly developing districts. Even though, the creation of ‘car-free’ districts is heavily constrained, there are still ways of bypassing the law. An example, “with the Vauban district, parking space-free and car-free forms of living have already been realized” (p.95, Traffic Development Plan 2020). Here residents joined a car free association which allows them to not realize their parking space obligations. Instead the association administers the area instead of the individual.

Shift

Second to a focus on avoiding travel, the goal of Freiburg is to shift modes of transportation away from modes that entail high emissions. Shifting transport modes towards more sustainable alternatives sees residents walking, cycling, using public transport, and carsharing options more, instead of relying on their conventional car. Cycling as a form of active travel is considered the core mode of transport in the city and suggest that ‘shift’ policies aim at increasing the share of bicycle use further. This is also supported by the following two statements showing the core values underlying the city’s cycling policy.

“Global climate change, in which traffic is a major contributor, and where zero-emission bicycles can make a significant contribution to slowing it down.” (p.11, Cycling Concept 2020),

“The increasing price of motorized mobility makes it more and more important to promote cycling, also from a social perspective.” (p.11, Cycling Concept 2020)

These Value premises are twofold outlining a focus on combatting climate change and one on increasing social justice in light of unequal mobility access. These ideals show a link to ideas of the post-growth discourse because of this twofold focus on improving environmental and social aspects.

Despite already considering itself as a 'bicycle city', the goal is to still increase the share of cycling as a mode of transport: "the share of bicycle traffic [...] should increase to over 30%" (p.20, Cycling Concept 2020). To achieve this Goal premise formulated in the cycling concept, several Means-goal premises were formulated. These include inter alia the improvement and installation of Bike&Ride infrastructure as well as a focus on informing citizens.

"Bike&Ride (B&R) is a tried-and-tested instrument that is already being used almost everywhere in Freiburg to mutually expand the catchment areas and areas of use of bicycles and public transport." (p.32, Cycling Concept 2020)

Like Park&Ride parking spots near public transport stations, Bike&Ride offers its users bicycle parking that allows the further use of public transport options.

"Good public relations work that encourages cycling and promotes prudent behaviour and compliance is therefore very important and increases the efficiency of infrastructure investments." (p.37, Cycling Concept 2020)

The document highlights the importance of combining improved cycling infrastructure with a successful information campaign. This is done to incentivise new users to consider biking as a transport mode as these might in some instances not be aware of improved options.

The 'traffic development plan' (Verkehrsentwicklungsplan) discusses the Circumstantial premise that walking as a mode of transport was second to developments considering biking and public transport. This went as far as "traffic areas for pedestrian traffic rededicated to motorised individual travel or to public transport and cycling" (p.21, Traffic Development Plan 2020). In the coming years the city plans to emphasise walking as a mode of transport as in the last years pedestrian traffic had decreased.

"Improvements for pedestrian traffic are particularly important from the point of view of decreasing pedestrian traffic, strengthening the 'compact city' [...]" (p.23, Traffic Development Plan 2020)

This link to the compact city concept shows the importance of walking as it not only supports the Goal premise of shifting travel behaviour away from unsustainable modes of transport but at the same time plays an important role in avoiding the need for travel in the first place. The more compact city districts are a reality throughout Freiburg, the higher is the importance of walking as it becomes more and more accessible. Means-goal premises aiming at increasing the attractiveness of walking include *inter alia* the removal of barriers (p.23), opportunities of stay (p.30), and improving the conditions for children (p.96).

Looking at public transport, the city has set the goal to increase the share of this mode of transport from "22 percent in 2014 to 60 percent in 2050" (p.65, Climate Protection Concept 2018). The focus to achieving this lies on the city's light rail and bus connections, with the inner city light rail considered as the primary option.

"In the long term, all districts of the densely populated core city should be connected to the light rail network, and regional traffic will also be further intensified." (p.14, Traffic Development Plan 2020)

The bus network functions as an extension to the light rail network and connects additional parts of the city, surrounding villages as well as industrial and commercial areas.

“Their task [buses] is the area development in the city centre away from the direct catchment areas of the light rail lines” (p.47, Traffic Development Plan 2020)

An important consideration in the public transport discourse is the “declining number of schoolchildren” (p.134, Traffic Development Plan 2020) which is linked to a loss of both customers and revenue. The city sees this as an opportunity because “staff and vehicle-intensive traffic peaks are weakened, and resources can be distributed evenly” (p.134, Traffic Development Plan 2020). This allows for an increase in service quality throughout the whole day.

The last cornerstone of the mobility discourse is the concept of carsharing which is described as the ‘public car’ (p.132, Traffic Development Plan 2020) and is considered to “gain importance in the future as an additional alternative in eco-mobility” (p.131, Traffic Development Plan 2020). This is based on the fact that “the members of car-sharing associations change their usage behaviour and drive more selectively and less frequently” (p. 84, Electric Mobility Concept). Furthermore, research shows that carsharing can have a positive impact on sustainable mobility if it is sufficiently integrated with public transport options (Akyelken *et al.*, 2018). The city of Freiburg supports the integration of carsharing with all other modes of transport of the eco-mobility sector by providing bike parking infrastructure at carsharing locations (p.41, Cycling Concept 2020), integrating their public transport passes (p.71, Traffic Development Plan 2020), and creating mobility hubs at public transport stops (p.132, Traffic Development Plan 2020).

Electrification of the eco-mobility sector

The city of Freiburg supports the electrification of the public transport, and carsharing fleets as well as the introduction of e-bicycles. In the ‘Electric Mobility Concept’ it is argued that “E-mobility should be supported for [...] mobility service providers (car sharing, cargo bike rental)” (p.91). In addition to this, “switching the bus network in Freiburg and the surrounding villages to electromobility” (p.137, Climate Protection Concept 2018) is formulated as a Goal premise. The document highlights that “the promotion of electric two-wheelers in the bicycle city of Freiburg receives special consideration” (p.91, Electric Mobility Concept). This again supports the narrative that Freiburg sees itself as a cycling city but at the same time strengthens the Goal premise of increasing the share of eco-mobility in individual travel.

A study found that to grow the market share of electric vehicles, public authorities should become a role model by having their own fleet of electric vehicles (Bakker and Jacob Trip, 2013). This is supported by the Means-goal premise that the city aims at becoming a role model in e-mobility by having an electric vehicle fleet.

“Procurement of electric vehicles and the associated charging infrastructure for the municipal vehicle fleet” (p.96, Electric Mobility Concept)

“The suitability of e-mobility for everyday use can be demonstrated by using e-buses in city traffic: e-mobility becomes visible and tangible, so that obstacles and prejudices can be broken down.” (p.83, Electric Mobility Concept)

This shows that the city of Freiburg is aware of the impact the municipality can play in becoming a role model, showcasing electric vehicles in the municipal fleet. Through only financially supporting

the electrification of the eco-mobility sector, the city aims to keep the focus on shifting the mobility needs rather than incentivising residents to purchase a large amount of private electric vehicles.

Improve

Third priority discussed by the city is to improve the sustainability of vehicles used in traffic that can neither be avoided nor shifted towards more sustainable modes of transport. The 'Electric Mobility Concept' again highlights the prioritisation of traffic avoidance and shift over the improvement of technologies used. A key term in the context of improving a share of vehicles is 'necessary' (notwendig), linked to the Goal premise that argues that non-avoidable traffic needs to be in the form of electric vehicles.

*"Where motorized private transport cannot be replaced, it is important to make it as environmentally friendly as possible. Electromobility can play a decisive role here in the future."
(p.9, Electric Mobility Concept)*

There is not much information on what is considered 'necessary' traffic apart from a short text passage stating that "e-mobility should also be promoted for unavoidable traffic (delivery traffic, care services, etc.)" (p.91, Electric Mobility Concept). Delivery traffic and car services are not considered private car use, not answering the question what volumes of traffic the city sees as necessary when it comes to private households. Subsidising the electric car over the conventional car can increase the uptake of electric vehicles according to the literature (Gass, Schmidt and Schmid, 2014). Here the city of Freiburg is following the strict line of not actively supporting the uptake through direct subsidies.

"However, it is clear that individual e-car ownership should not be financially supported, as this contradicts the goal of reducing MIV in the city." (p.91, Electric Mobility Concept)

Next to subsidies, the literature points towards charging infrastructure as an important factor in increasing the share of electric vehicles (Bakker and Jacob Trip, 2013; Perdiguero and Jiménez, 2012). This Circumstantial premise points out an important challenge the city is facing: "The 'chicken and egg problem': without an adequate charging infrastructure, there can be no e-mobility and without e-mobility there can be no developed charging infrastructure" (p.60, Electric Mobility Concept). The city aims to break the cycle and address this problem by developing charging infrastructure, providing citizens with advice, and considering e-mobility in city planning (p.91, Electric Mobility Concept).

5.2.4 Preliminary conclusions Freiburg

The following section aims at answering the sub-question: *What green growth and post-growth discourses are used in housing and mobility policies in the city of Freiburg?*

The housing discourse in Freiburg has three primary goals, first increasing the social housing stock, secondly reducing per capita floor space, and thirdly improving the energy efficiency of the existing and to-be-built housing. The property policy approach aims at a sufficient supply of social housing units to the residents of the city. To achieve this, the city no longer sells the ground on which housing developments happen to be able to influence rent prices. In further support of less well-off citizens is the Means-goal premise of supporting shared living arrangements in the city together with the home exchange programme. This supports low rents and at the same time a reduction in per capita floor space. Shared forms of living use less floor space because common areas are used by all residents. The home exchange programme allows for better use of space since it makes it possible for families

to increase their living space. The refurbishment of the existing housing stock supports social housing goals as well. Subsidies given to make housing more energy efficient are linked to long-term occupancy commitments. For newly built housing there are energy standards that need to be adhered to which should result in an energy efficient housing stock.

The mobility discourse in Freiburg shows a clear focus on avoiding traffic, followed by shifting modes of transport, and only lastly improving motorised individual traffic. Traffic avoidance is to be achieved through implementing the concept of the ‘compact city’. This approach reduces the need for traffic in the first place through a mix in functions in the neighbourhood which in an ideal world sees its residents work, live, and spent their free time within walking and cycling distance. In line with this, Freiburg aims to shift modes of transport away from conventional car use and towards active travel, carsharing, and public transport options. Fitting with their approach of creating shorter distances for its residents, the city wants to put higher emphasis on improving walking infrastructure as this was second to most other modes of transport for some time. To allow users at time of need to leave their compact neighbourhood, good public transport connections are to be ensured. Lastly, ‘necessary’ traffic is to be electrified which partly includes individual car use and at the same time carsharing options and logistic vehicles. The city does not clearly define what falls under ‘necessary’ traffic but states that individual use of electric cars will not be subject to subsidies as to not undermine the primary goals of their mobility policy.

Table 3 shows an overview of the different policy approaches and whether in the case of Freiburg they show a primary direction towards post-growth or green growth ideas. To answer the sub-question, housing policies in Freiburg clearly show a link to growth-reducing and growth-limiting ideas in the form of social housing developments, shared forms of living, and their home exchange programme. This links to ideas of the post-growth discourse because of a focus on sufficiency strategies and changing the behaviour of its residents. Energy efficiency measures aims at making the continued growth of the housing stock compatible with environmental goals. These energy standards for to-be-built housing therefore link to ideas of the green growth discourse. The mobility discourse is dominated by approaches limiting growth, with a focus on traffic avoidance, and approaches reducing economic growth through a change in mode of transport to more sustainable alternatives. These approaches primarily link to post-growth ideas. Whereas lastly, the remaining traffic is to be electrified which shows links to ideas of the green growth discourse.

SECTOR	POLICY	PREMISE	PRIMARY DIRECTION
HOUSING	Property policy approach to increase social housing	Means-goal	Post-growth
	Support of shared living developments	Means-goal	Post-growth
	Incentivising home exchange	Means-goal	Post-growth
	Energy efficiency standards	Means-goal	Green growth
	Refurbishment of existing housing stock	Means-goal	Green growth
MOBILITY	Support of the ‘compact city’	Means-goal	Post-growth
	Promote car-free & parking-space free living	Means-goal	Post-growth
	Improvement & installation of Bike&Ride locations	Means-goal	Post-growth

	Informing citizens	Means-goal	Post-growth
	Electrification of necessary individual motorised travel	Goal	Green growth

Table 3 - Policy approaches Freiburg

5.3 Discussion

The following discussion answers the sub-question: *How are the green growth and post-growth discourses found in the housing and mobility policies of Münster, and Freiburg different and/or similar?*

Housing policies of the cities show similar Goal premises focusing on creating sufficient housing for its residents with a focus on social housing, decreasing per capita floor space, and improving the energy efficiency of the existing and to-be-built housing stock. The two cities aim at developing additional housing to address housing shortages, and have agreed upon policy that allows to keep the ground on which housing developments take place in city possession. Through this, they aim to reach social housing goals by obligating developers to build a certain amount of social housing. Whereas Freiburg focuses primarily on social housing developments, Münster has a split focus on social housing developments and on wealthy residents, and families at the same time. One reason for this is, that Münster believes that ‘trickle-down’ effects can play a role in supplying sufficient social housing when families and wealthier residents have the option to move to new developments. In Freiburg the support of shared living arrangements and the home exchange programme are two approaches that aim at the reduction of per capita floor space. The city actively supports these by giving priority to shared living developments when handing out building land, and by subsidising the home exchanges. There is a difference in the translation of the goal of floor space reduction into Means-goal premises between the cities. Münster has not translated their goals into concrete action so far, hoping that nationwide trends are enough to introduce shared forms of living. Considering the refurbishment of the existing housing stock and standards for to-be-built housing, technological innovation leads to energy efficiency measures that reduce the energy use of buildings. In Freiburg, subsidies given to achieve this are linked to long-term occupancy commitments and rent stabilisation which supports social housing goals of the city. A focus on economic growth over social values is present throughout housing policy in Münster which links to green growth ideas. On the other hand, Freiburg considers the needs of its more vulnerable residents in all proposed policies, oftentimes neglecting the potential for economic growth in the process.

Mobility policies of both cities focus on the Avoid-Shift-Improve concept aiming at traffic avoidance, a shift to more sustainable modes of transport, and electrification of traffic. There is a difference in prioritisation with Freiburg’s policy clearly stating an order of prioritisation whereas Münster’s does not. Here, Freiburg prioritises the three approaches in order which is in line with literature findings on the applicability of the concept to achieve sustainability goals. Both cities state the aim to avoid the need for traffic in the first place by implementing the compact city concept. Freiburg aims to do so by building car-free and parking space-free districts which results in a higher availability of space. This is in line with the compact city concept as it allows for neighbourhoods with a denser mix in functions. Münster’s policy states the aim and points out that changes in other city planning domains are needed to achieve this goal. Despite this, there is no chapter designated to the implementation of the concept in housing policy. Münster and Freiburg put large emphasis on the shift away from the conventional car to more sustainable modes of transport. The cities support the uptake of multi-

modal travel which combines different sustainable transport modes. To achieve this goal, Freiburg installs Bike&Ride locations and Münster adds bicycle parking to bus stops among other things. Mobility policy in Münster considers the large number of commuters as an important target group for their interventions since this group shows the largest share of car travel. The installation of high quality biking infrastructure aims to increase the use of the bicycle for daily work commute. The electrification of traffic is a long-term goal of the cities, with Freiburg having a separate policy document for electric mobility on its own. Still, whereas Freiburg sees this as the last priority, Münster wants to promote the uptake by investing into an electric municipal fleet. This fleet is supposed to bring the use of EVs closer to the residents if they can try them out in carsharing schemes themselves. Freiburg on the other hand, states that the purchase of electric vehicles for individuals is not financially supported. The reason for this is that they do not want to undermine progress made in approaches that aim at traffic avoidance and the shifting of transport modes. With a clear focus on these two, Freiburg shows approaches that aim to limit economic growth. Shifting modes of transport is similarly supported by Münster which signals the wish to limit economic growth in this area. The city is not as far in implementing the compact city concept and at the same time promotes electric vehicles use. This promotion shows the aim to support a continued focus on economic growth, linking to green growth ideas.

Chapter 5: Conclusion

This chapter answers the main research question: *What approaches linked to the green growth and post-growth discourses, aiming at reaching climate goals of the respective cities, can be observed in housing and mobility policies in Münster and Freiburg?*

Münster and Freiburg have set strict climate targets for the year 2050 with Münster aiming at reducing emissions by 95% and Freiburg aiming at becoming climate neutral. Housing and mobility policies play an important role in reaching these. The main policy discourse in the housing sector is the inherent lack of living space, especially with regards to social housing units. Münster follows economic growth ideals with a focus on building additional housing for all residents. Freiburg takes a different approach by prioritising social housing developments and new forms of housing like shared living. From a sustainability perspective, the amount of floor space used per person needs to decrease which is actively supported by Freiburg but not yet translated into action by the city of Münster. The mobility discourse of both cities is dominated by the Avoid-Shift-Improve concept. Here, Freiburg prioritises limiting and reducing growth by focusing on avoiding the need for traffic. Münster on the other hand, focuses on shifting modes of transport and thus following post-growth ideas while at the same time promoting EVs and with it continued economic growth. Ideas of the post-growth discourse are prominent in Freiburg as well as Münster although at different stages of implementation. Freiburg seems to have further developed Means-goal premises translating these post-growth ideas into action. Münster on the other hand is not yet as far in developing concrete approaches. Overall, approaches linked to both the post-growth as well as the green growth discourse are present. In conclusion, Freiburg is more open to develop in a direction that links with post-growth ideas than Münster currently is. There is still room for improvement looking towards the future in the two cities, but first steps are taken towards post-growth planning ideals.

This research helps advance our understanding of the current place of the post-growth and green growth discourses in policy making in two medium-sized, quite autonomous university cities in Germany. The purpose was to find out what can be learned from Münster and Freiburg when it

comes to housing and mobility approaches and how these tackle the prospect of economic growth when trying to reach the cities' climate goals. Something that we can learn is that having an integrated plan within a policy sector as well as between different sectors helps with achieving goals. The integration of policy goals within a certain sector is showcased by the city of Freiburg and the city's approach to achieving social goals. The building and support of social housing developments is present throughout housing policy, from rent stabilisation and occupancy commitments, over shared forms of living, to the property policy approach of the city. All these measures have one thing in common which is the support of social housing ideals above focusing on economic growth. Next to this, the compact city concept is not a new approach to be taken in planning, nonetheless, we can learn something from the cross-sectoral approach taken by the city of Freiburg. Here, both housing and mobility policy works together to change the way residents live in their neighbourhood. Car-free districts show this quite well in that they are supporting the compact city concept and at the same time a mobility shift.

Future research should include expert interviews to understand the thought process behind the development of certain policies. By doing so, background on possible tensions and differences within policy can be discussed in the analysis which further adds to our understanding of these processes. Furthermore, a media analysis of discourses present could improve the writing of new policy in the future. In addition, based on the importance Münster sees in addressing the mobility behaviour of commuters, future research could consider a more regional perspective where the impact of surrounding municipalities is analysed. If this research is to be replicated, the timing of the research process is of importance. On the one hand, the researcher can choose a starting point that links with the introduction of new policy documents. This allows for an up-to-date analysis of what to expect from the specific sector in the coming years. On the other hand, policy documents analysed in this research were a few years old, in fact there are currently new mobility policies decided upon by both cities. The findings can be of use by potentially adding to the current discourse on mobility. It is important to have a cross-sectoral approach to achieve sustainable urban development. There are of course tensions between housing and mobility policies due to the fact that policies are not developed at the same time. Nonetheless, especially with the example of the compact city concept, cross-sectoral approaches are needed to make first steps towards a potential post-growth city. The term post-growth might not be used literally in planning policy in Münster and Freiburg, but this does not mean we as planners cannot make first steps in support of post-growth ideas. Oftentimes policy leaves room for interpretation and it is up to the planner to decide what to do with this room.

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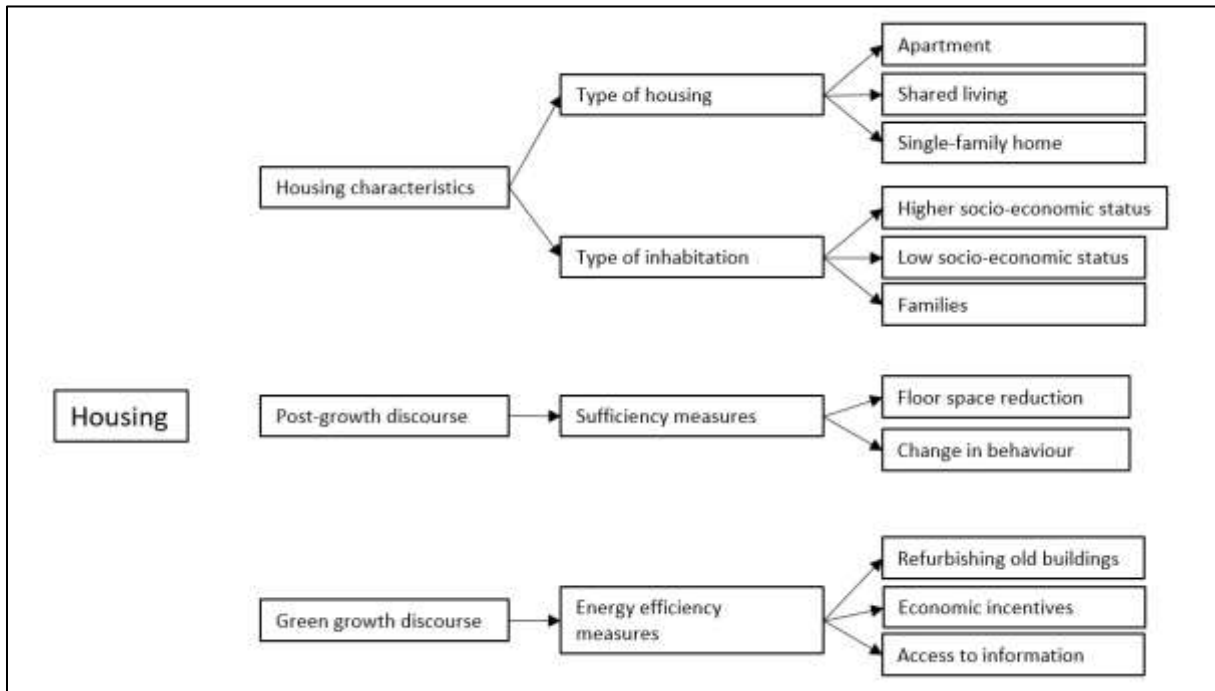
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Appendix

Appendix I – Code tree ‘Housing’



Appendix II – Code tree ‘Mobility’

