

# Master Sustainable Business and Innovation



## Degrowth Urban Mobilities and Insights into how Universities Interact with its Themes.

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## Abstract

Humanity is facing unprecedented challenges dealing with the effect of anthropogenic climate change on the planet. Without radical solutions across all sectors of society aimed at addressing these climate problems, the world risks tipping over the 1.5°C warming limit as set out in the Paris agreement. To meet these challenges some academics are calling for a transition to a new socio-economic paradigm, degrowth, which prioritises equity in living standards and maintaining the planetary boundaries above economic growth. One of the sectors which degrowth is looking to influence is the mobility sector, which has historically had a close relationship to growth and environmental emissions. But enabling radical social change is a difficult task, however, educational institutions have been cited as a special case when it comes to societal change and could help degrowth challenge the growth hegemony. To help foster this change. this study looks to explore what the main themes of degrowth urban mobility and how university interact with degrowth. This will be done by taking a deductive and inductive approach to this question, using a mixture of literature study and interviews with scholars to do so. The result of this study is that degrowth urban mobility can be categorised by 4 themes, 1. as a counter to the hegemony of growth mobility, 2. As a balance of tensions within degrowth urban mobility, 3. As a warning against techno-optimism, but not to appropriate technology use, and 4. As a chance to remake the urban. The study also used insights gained from academic scholars to construct a framework to investigate how universities interact with the societal need for degrowth, through investigating its links to degrowth urban mobility. The results of this is that universities are failing to act in a socially responsible manner toward degrowth urban mobility through its social and organisational impacts. However, in its educational and cognitive impacts, the picture is mixed, with studies on geography aligning with degrowth urban mobility principles, but engineering failing in this. This suggests that universities have a lot to do before becoming socially responsible for degrowth futures, and more research should be undertaken to examine these links between universities and degrowth.

# Contents

Abstract.....	2
1. Introduction .....	5
1.1. Underlying Problems.....	5
1.2. Aim and Research Question.....	6
2. Theory .....	7
2.1. Urban mobility and sustainability .....	7
2.2. Urban Mobility and Degrowth .....	8
2.3. Degrowth and Social Change .....	9
2.4. Universities and Social Change .....	9
3. Methodology.....	10
3.1. Research Design.....	10
3.2. Sample Strategy .....	11
3.3. Data Collection.....	12
3.4. Operationalisation .....	13
3.5. Data Analysis .....	13
3.6. Research Quality Indicators .....	15
3.7. Ethics and Privacy.....	15
4. Results.....	16
4.1. What are the Themes of Degrowth Urban Mobility? .....	16
4.1.1. A Counter to the Hegemony of Growth Mobility .....	16
4.1.2. A Balance of Tensions Within Degrowth Urban Mobility .....	18
4.1.3. A Warning against Techno-Optimism but not Anti-Technology .....	20
4.1.4. A Chance to Remake the Urban .....	22
4.2. How can Universities Interactions with Degrowth Urban Mobilities be Conceptualised?.....	23
4.2.1. The Cyclic-Inductive Process .....	24
4.2.2. Theory Behind the Framework .....	25
4.2.3. The Framework for Social Responsibility in Universities .....	27
4.3. How are Universities Currently Interacting with Degrowth Urban Mobility.....	28
4.3.1. Cognitive Impacts.....	29
4.3.2. Educational Impacts.....	31
4.3.3. Social impacts.....	32
4.3.4. Organisational impacts .....	34
5. Discussion.....	35
5.1. Theoretical Implications.....	35
5.1.1. For Degrowth Urban Mobility .....	35
5.1.2. The Framework for Degrowth Social Responsibility in Universities .....	35
5.1.3. For Universities and Degrowth .....	36
5.2. Theoretical Limitations .....	36

5.2.1.	Literature Sampling.....	36
5.2.2.	Keyword Selection.....	37
5.2.3.	Interviewee Diversity .....	37
5.2.4.	One Interview cohort .....	37
5.2.5.	Framework limitations .....	37
6.	Conclusions .....	38
	References .....	39
	Appendix A – Interview guides .....	43
	Appendix A.1 Interview Guide 1 .....	43
	Appendix A.2 – Interview Guide 2 .....	45
	Appendix A.3 – Interview Guide 3 .....	48
	Appendix B – semi-systematic Literature review overview.....	50
	Appendix C – Full literature list.....	52
	Appendix D – Consent Form .....	54

# 1. Introduction

Humanity is currently facing unprecedented challenges dealing with the effects our species is having on the planet. As global anthropogenic greenhouse gas emissions continue to rise, (IPCC, 2023) the larger and more radical the changes society will need to employ if it is to keep within the 1.5°C of warming as set out in the Paris agreement (McPhearson et al., 2021; UNEP, 2022). One of the radical transformations proposed as a solution to these issues, is degrowth, which calls for a large societal shift away from the current economic model of consumption and accumulation towards socio-ecological balance and satisfaction, thus greatly reducing humanities impact on the environment (D'Alisa et al., 2014; Hickel, 2020; Soper, 2020). While many decision leaders shun such a radical change in favour of incremental changes (Mastini et al., 2021), modelling has suggested that degrowth is the only change which comes close to achieving the goal of staying within 1.5°C of global warming (Keyßer & Lenzen, 2021). However, as a theory introduced in 2008 (D'Alisa et al., 2014), the application of degrowth to different sectors of society is currently lacking (Dillman et al., 2021) as well as facing significant barriers in challenging the current dominant socio-economic system (Khmara & Kronenberg, 2020). Using one of the sectors in need of a sustainability transition, urban mobility (Cattaneo et al., 2022; Dillman et al., 2021), this study investigates what degrowth means for the urban mobility sector, and how universities could interact with this field to effect change.

## 1.1. Underlying Problems

In 2023 the IPCC published the AR6 synthesis report into climate change (IPCC, 2023), highlighting that based on current commitments it is likely that humanity will overshoot 1.5°C of warming by the end of this century. This is complemented by updated analysis from Rockström et al. (2023), showing that humanity has made little to no progress in addressing it's impacts on the planetary boundaries needed to maintain Earth's systems in balance. In order to meet these targets, the IPCC calls for, "rapid and far-reaching transitions across all sectors and systems (..) to achieve deep and sustained emissions reductions and secure a liveable and sustainable future for all." (IPCC, 2023, p. 30).

In response to these warnings, some world governments have been promoting a green new deal, or a decoupling of economic growth and emissions to meet these targets based on sustainable development principles (Fetting, 2020; Galvin & Healy, 2020). This would mean reducing reliance on fossil fuels through innovation and finding new systems and technologies to produce economic goods, combined with carbon capturing systems to offset any further emissions (Hickel & Kallis, 2020). However, a growing body of experts are unconvinced that this transition will be deep enough or come quickly enough to keep climate warming to 1.5°C (Hickel, 2020; IPCC, 2022; Raworth, 2017) and some are arguing that we need a different type of transition (Hickel, 2020; Raworth, 2017). Degrowth is an increasingly popular alternative to the green growth strategy, and proposes a societal transition, to one free of the hegemony of growth economics, equality in living standards, and a society that maintains the planetary boundaries (D'Alisa et al., 2014). Several studies have suggested that a degrowth approach is the only transition that enables humanity to meet the 1.5°C limit (de Blas et al., 2020; Keyßer & Lenzen, 2021). While degrowth is a promising alternative to green growth, it is a relatively new field of study with the first degrowth conference taking place in 2008, so while the literature is growing (D'Alisa et al., 2014), there is a lack of specific degrowth views on different sectors of society and how degrowth would tackle these (Dillman et al., 2021).

One sector which is strongly linked to carbon emissions and growth and is in need of transition is the mobility sector (Cattaneo et al., 2022; Dillman et al., 2021). Worldwide in 2019, the mobility sector produced 15% of the total anthropogenic CO<sub>2</sub> emissions, a figure which is forecast to grow further in the near future (Kahn Ribeiro et al., 2022). Like most of society, growth is deeply embedded within the mobility sector and historically rises in wealth have been coupled to rises in mobility (Ferreira & von Schönfeld, 2022; Savini, 2021; te Brömmelstroet et al., 2022). Much of the literature on reducing mobility-based emissions is concentrated on urban environments, as they have conditions which could allow for steeper emissions reductions, such as dense populations, and short journey distances (Cattaneo et al., 2022). These includes initiatives such as the EU's for Sustainable Urban Mobility Plan (SUMP) (European Commission, 2021; Tsavachidis & Petit, 2022), however, many of these solutions are still based on the growth model (Garcia-Ayllon et al., 2022). Degrowth scholars in this area, argue that like the rest of society, mobility needs to transition towards

strategies and indicators which respect planetary boundaries and promote societal equity if it is to truly tackle its socio-ecological problems (Cattaneo et al., 2022; Dillman et al., 2021). However, the degrowth view of urban mobility is currently in its infancy, and descriptions of what degrowth in urban mobility are incomplete.

Because socio-economic growth is so ingrained within society, it is considered to be in a hegemonic position within society (Hickel, 2020; Raworth, 2017). For degrowth to challenge this position, it needs to find allies to help bring its message to a wider audience and help create the conditions necessary for societal change (Hickel, 2020; Raworth, 2017). Within institutions with potential to effect change, education institutions are seen as special cases having the unique ability to influence changes to society (Dzimińska et al., 2020; Žalėnienė & Pereira, 2021). The ability of educational institutions to embed cultural changes has led sustainability academics to view universities as one of the most important institutions in combatting climate change (Dzimińska et al., 2020; Kassel et al., 2017), and as a place where the 'sustainability mindset' of students can be shaped (Žalėnienė & Pereira, 2021). In addition, many people believe that universities have a societal responsibility to work towards positive social and environmental changes (Ali et al., 2021; Esfijani et al., 2012). However, these positive changes are typically from a sustainable development background (Ali et al., 2021; Dzimińska et al., 2020), and currently there is little literature exploring how universities may act for degrowth social change (Bobulescu, 2022).

## 1.2. Aim and Research Question

The aim of this research is to gain insights into how universities might act towards degrowth urban mobility for social change. To investigate this outcome the research will consist of two sub-questions which will help answer the following research questions:

### **RQ: How are universities currently interacting with degrowth urban mobility?**

This main research question will be explored by applying the results of the two sub-questions. The first sub question, aims to address a gap in the degrowth urban mobility literature, and aims to identify the main themes of degrowth urban mobility:

### **SQ1: What are the themes of degrowth urban mobility?**

This sub-question will be investigated using thematic analysis of current degrowth urban mobility literature, as well as interviews with scholars currently active in the urban mobility or degrowth literature. Through this articulation of the main themes of degrowth, an insight into how the university interacts with these themes can be obtained.

The second sub-question, addresses a second gap in the literature, and aims to provide a framework of how the university interacts with degrowth ideas:

### **SQ2: How can universities interactions with degrowth urban mobility be conceptualised?**

This sub-question will be investigated using a cyclic-inductive method, which aims to provide an emergent basis for the construction of a framework. To do this, interviews will be held with scholars currently active in both the urban mobility or degrowth literature and hold an active university position. The framework devised here, along with the insights gained from the interviews and the outputs of SQ1 will then be used to answer the main research question, a full picture of the research approach is given in figure 1.

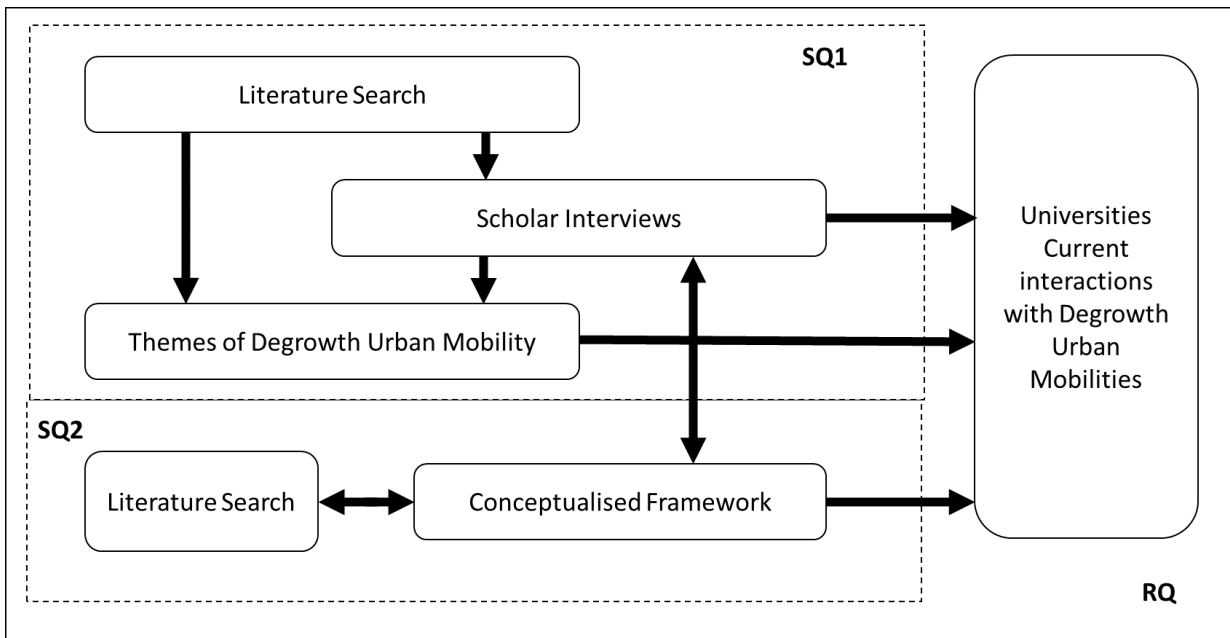


Figure 1 Outline of Research process

This paper is structured as follows, after this introductory section is a theoretical section where the main concepts of degrowth in urban mobility is explored, alongside an introduction to social change. This will be followed by the methodology of the of the thesis, and the results. Due to the sub questions, the results will be split into three sections, with the second section containing additional theory relating to the framework used to answer the research question. Following the results, will be a discussion section and a conclusion to finalise the research.

## 2. Theory

### 2.1. Urban mobility and sustainability

The development of the transport sector is closely tied to both the fossil fuel industry and economic growth (Jones, 2014), such that the contribution of the transportation sector to the world’s greenhouse gas (GHG) emissions now sits at 15% of the world’s total emissions (Kahn Ribeiro et al., 2022). This figure is set to grow further as developing countries increase their transportation emissions as they develop, even as more wealthy nations attempt to decouple transport from emissions (Kahn Ribeiro et al., 2022). However direct CO<sub>2</sub> emissions is only one aspect of transportation externalities as they are also responsible for issues with air and water pollution, environmental conflicts, and land-use changes (Cattaneo et al., 2022). Because increasing speeds have been historically linked to increased economic growth (Ferreira & von Schönfeld, 2022; Savini, 2021; te Brömmelstroet et al., 2022), urban environments have been designed around the economic desire for faster transport links, often prioritising these over human needs (Cresswell, 2021). These links to growth persist today, as countries attempt to decouple transport from GHG emissions, they often still use the same growth centric indicators and measures which cause other sustainability related issues (Ferreira & von Schönfeld, 2022; Savini, 2021; te Brömmelstroet et al., 2022). Even the flagship EU urban mobility policy (European Commission, 2021), the SUMP, has been criticised by those from the degrowth movement as continuing to be underpinned by growth measures and will not bring around a sustainable mobility system (Cattaneo et al., 2022).

Scholars within urban mobility have long acknowledged these issues, promoting lower mobility options, shared mobility options, and new indicators in order to improve the socio-ecological results of urban mobility (Duarte et al., 2010; Fullagar et al., 2012; Machado et al., 2018; Popan, 2019). However, the resistance to such changes within the urban mobility field are strong (Ferreira et al., 2012; Ferreira & von Schönfeld, 2022), not only from incumbent industries such as the car lobby, but also in terms of how cities should be planned. Many of these promote iterative

changes to urban mobility, such as moving from fossil fuel powered vehicles to electric, or more efficient, faster travel options within cities (Cattaneo et al., 2022). These iterative changes do not address the fundamental issues within the mobility sector, nor do they address these issues at the speed required to restrict global warming to 1.5°C warming (IPCC, 2022). If countries are to achieve their Paris Agreement commitments, then a radical reshaping of urban mobility and how it is measured is required.

## 2.2. Urban Mobility and Degrowth

Compared to growth, degrowth is relative newcomer as a socio-economic viewpoint; having its origins in grassroots protest movements in France against sustainable development, car-infested cities, and advertising in the early-2000's (D'Alisa et al., 2014). The movement quickly grew, and in 2008 the first research seminar was held in Paris (D'Alisa et al., 2014). As a concept, degrowth, aims to create a new paradigm, transitioning away from growth, towards a society which aims to ensure social wellbeing within ecological limits (Paulson, 2017). Although degrowth is strongly associated with a grassroots movement that defies a single definition (Demaria et al., 2013), (Khmara & Kronenberg, 2023, p. 1), attempt to give an outline, stating that, "the objectives of degrowth are to meet basic human needs and ensure a high quality of life, while reducing the ecological impact of the global economy to a sustainable level, equitably distributed between nations". Themes of degrowth from D'Alisa et al. (2014) help to inform how the field will try to achieve this:

- **Enable De-growth** – The end to both the colonisation of public debate of growth and the abolishment of growth as a social objective.
- **Lower metabolism** – Dematerialisation of society, through sharing, simplicity and de commodification, allowing societies to drastically reduce their resource use.
- **Bring Justice** – The aim for a more just society, with gender, environmental, and equity being mainstays of the new society

In recent years degrowth has become a more prominent viewpoint, with several scholars arguing that it is the best option to restrict warming to 1.5°C, whilst maintaining a good standard of life for all (D'Alisa et al., 2014; Hickel, 2020; Raworth, 2017). How this will look for different sectors of society is still unclear, as in-depth research on degrowth in across different sectors is uneven (Schmid, 2022). Within the urban mobility scholarship, the conversation around degrowth has begun, but lags behind housing and urban planning within the scholarship of urban change (Schmid, 2022). Despite this, a number of articles discuss degrowth in urban mobility, however the majority of these articles focus on the issues with mobility as part of a wider conversation on degrowth within urban environment (Khmara & Kronenberg, 2023; Schmid, 2022; Xue, 2014).

Despite this, these few papers are beginning to sketch out the major themes of degrowth mobilities ants to be, and how it interacts within the wider urban area systems. However, a clear description of what degrowth urban mobility is still lacking. Instead, most papers refer to descriptions of degrowth by Demaria et al. (2013) or D'Alisa et al. (2014), without introducing exactly how this effect urban mobility (Khmara & Kronenberg, 2023; Prieto & Domínguez-Serrano, 2017). Recently, there have been attempts by some scholars to offer insight into what degrowth urban mobilities might look like. Cattaneo et al. (2022) recently published an evaluation of the modes of mobility suitable for a degrowth urban environment, ranking different modes of mobility on concepts such as conviviality, environmental impact, and justice. While active methods of mobility scored highly, it also scored poorly on certain measures, including comfort and speed. A separate paper by Ferreira & von Schöfeld (2022) argues that future degrowth urban mobilities will need to incorporate several different types of mobility, to ensure that the needs of the entire community are met. This means ensuring that everyone has access to locations where they can meet their basic needs through mobility, without causing negative environmental externalities which impinge on other people's rights (Dillman et al., 2021). However, despite these contributions helping to conceptualise the field of degrowth urban mobility, there remains many gaps in the literature to explain what the dominant themes of the theory are, and how they may come to be implemented.



### 2.3. Degrowth and Social Change

As a concept aiming to bring about a change in the current social paradigm, degrowth faces a difficult task. The current dominant socio-economic theory, based on economic growth, has been the main social driver for more than several generations (Hickel, 2020; Raworth, 2017). During this time, the growth mindset, based on exploiting resources in the pursuit of financial gain, has become ingrained at almost every level of society (Hickel, 2020; Raworth, 2017). Even as the world faces the dangers of climate change, it is finding it difficult to even contemplate a change to this system (Paulson, 2017). Instead, the growth elite rely on techno-optimistic imaginaries that new innovations will arrive to counterbalance these issues (Paulson, 2017), and in the meantime business can continue as usual. But not quite, as the situation described by scientists is so stark, that cracks in the system are appearing (Meadows et al., 1972; Raworth, 2017). The shift of many governments and institutions to green growth approaches to climate change (Fetting, 2020; Galvin & Healy, 2020), shows the urgency of the current situation. By incorporating an environmental pillar into their strategies, even if it is a growth supporting one, it is acknowledging that this current socio-economic system cannot save us from climate change (Fernandes et al., 2021).

However, despite the cracks appearing, the growth hegemony within society is still strong, and degrowth will need allies to topple the system (Schoppek, 2020). One method which businesses have been using to promote their credentials towards green growth is Corporate Social Responsibility (CSR) (Khmara & Kronenberg, 2018; Sarkar, 2013). CSR is an initiative from companies, sometimes overseen by an external body, which tries to incorporate projects with focuses outside of generating profit, such as investing in community projects, or developing sustainability (Scalet & Kelly, 2010; Khmara & Kronenberg, 2018). While these undertakings have been criticised as being nothing more than greenwashing cases, others have suggested that by incorporating elements of sustainability through CSR to their business models, companies are opening themselves up to changes (Forcadell & Aracil, 2019; Khmara & Kronenberg, 2018)). This is because to remain seen as socially responsible by the public, businesses must continue to support its CSR claims, or risk reputational damage, which if serious enough could put the corporation out of business (Kim & Woo, 2019). Most current forms of CSR then, come from the angle of green growth, while a degrowth approach to CSR has been considered by some (Khmara & Kronenberg, 2018), there is still a feeling that the concept is too radical for organisations whose principal goal is for financial gain (Khmara & Kronenberg, 2018). However, if degrowth were to become part of CSR programmes, then it would be a sign that the hegemony of growth is finally being challenged.

### 2.4. Universities and Social Change

Universities hold a special place in the literature on social change (Kassel et al., 2017). Often, they are seen as institutional agents with unique abilities within the wider societal context, to influence changes to the societal norm (Dzimińska et al., 2020; Žalėnienė & Pereira, 2021). This can be seen in several instances throughout history, with universities being the breeding ground of social movements, such as in Hong Kong, and the UK (Brooks, 2016). This is in part due to the unique position of the university as places where knowledge is generated, perpetuated, and disseminated, allowing the university the chance to change cultures which can lead to societal change (Dzimińska et al., 2020). This ability to embed cultural changes has led sustainability academics to view universities as one of the most important institutions for combatting climate change (Dzimińska et al., 2020; Kassel et al., 2017), as a place where the 'sustainability mindset' of students can be shaped (Žalėnienė & Pereira, 2021). This sustainability mindset breaks away from traditional management mindsets characterised by siloing by integrating systems thinking, ethics and environmental studies within the wider context of values, knowledge, and competency (Kassel et al., 2017). The importance of this has become more prominent in recent years as scholars have realised that sustainability-based education can affect worldviews in the long term (Žalėnienė & Pereira, 2021), which could lay the groundwork to enable challenges to the current socio-economic hegemony.

Additionally, some academics also point out, that not only do universities have the tools available to change society, but they also have an ethical obligation to do so (Dzimińska et al., 2020). While universities have long had associations with their communities through community engagement programmes (Esfijani et al., 2012), by the 1990's some scholars felt that "higher education is part of the problem" in societal issues (Boyer, 1996, p. 23), and that changes in

these relations were needed. The American Scholar, Ernest Boyer, championed for universities to become reengaged with their communities, introducing the field of the scholarship of engagement to further this ideal (Boyer, 1996; Esfijani et al., 2012). The issues addressed by these studies focused on economic and societal development through academic teaching and research within the community (Esfijani et al., 2012). However, with the rise of sustainable development as a field, many felt a stronger approach was necessary. In response, a version of CSR for universities was founded, which aimed to embed the principles of sustainable development into the social responsibilities of the university (Ali et al., 2021). University Social Responsibility (USR) embeds the environmental and ethical notions of sustainable development into the community engagement of universities and aims to ensure that university's outputs align with the goal of supporting society with an ecological lens (Bokhari, 2017).

However, despite the existing CSR template, and the theoretical basis for the sustainable development insight, USR guidelines have been more difficult to implement (Ali et al., 2021). This is due to the added complexity of the university's engagement with the creation and generation of knowledge, which makes it a special case (Kassel et al., 2017; Dzimińska et al., 2020; Ali et al., 2021). This has led to several attempts to define the scope of USR (Ali et al., 2021), and several attempts to form a working framework (GUNI, 2014). What these frameworks allow is for the social responsibilities of universities to be measured and allow investigation of whether they are meeting the standards as set out by sustainable development. Despite the importance of universities in social change, (A. Jones, 2021; Kaufmann et al., 2019), has so far, not investigated ways of measuring these responsibilities of universities, and as such, is currently lacking in quantifiable methods to gauge how 'degrowth' a university is (Bobulescu, 2022).

### 3. Methodology

#### 3.1. Research Design

The study adopted for this research takes both a deductive and cyclic-inductive qualitative approach to the field of degrowth, figure 2. This approach was chosen due to the need to construct a frame from existing literature on degrowth urban mobilities, before investigating how this can be viewed through the university to answer the research question. The deductive approach to SQ1, allows the main themes of degrowth urban mobility to be contextualised, providing the theoretical base for SQ2, with both providing inputs to answer the main research question. A qualitative approach to this allows for the overarching themes of degrowth urban mobility to be explored and gain insight to what the subjects core philosophies are.

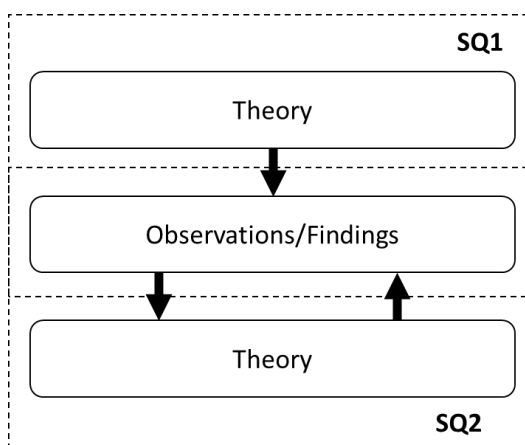


Figure 2 Deductive and cyclic-Inductive approaches to SQ1 & SQ2

The approach to the sub-question 2 is a novel qualitative cyclic inductive approach. The initial approach taken towards SQ2 was an inductive approach, with the view that the interview would lead to the generation of theory. However, during initial interviews, a narrower set of themes emerged than was foreseen, which was not well covered by the interview script. This led to these initial observations influencing the direction of the study. By allowing the emergent data guide where the research focuses, the study adopts a grounded approach to the research. This cyclic-inductive

approach will allow the theories behind the framework to become apparent, helping generate to generate a conceptual framework which satisfies SQ2.

Together, these sub-questions allow the main research question to be answered by applied the themes found during the SQ1 through the framework and insights gained from SQ2.

### 3.2. Sample Strategy

To fully answer SQ1, two separate data collection methods were used, requiring two sampling strategies to be employed. For the literature search, the sampling approach taken was purposive, searching for keywords known to be associated with degrowth urban mobilities. These purposive keywords were taken from two articles which inspired the research, Cattaneo et al. (2022), and (Ferreira & von Schönfeld, 2022), and are shown in table 1. The keywords identified from these papers, were sorted into two categories, one based on the social element of the term, and one on the mobility element of the term. These were then used to search for literature using the Boolean operator AND to generate the samples. During the search process, the keywords of papers selected for collection were analysed, to capture any emergent keywords that had been missed during the initial search, however in this case, none of the keywords in the collected papers proved to be significant, which was considered as any keyword with more than 2 mentions.

Table 1 Keywords used in the literature search

Societal Keywords	Mobility keywords
Degrowth	Mobilit*
Post growth	Urban planning
	Transport*
	Urban mobility
	Urban traffic

To complement the literature search, 12-20 interviews were sought with scholars in the same field to expand upon the definition available from a literature search. Potential interviewees were purposively identified from the authors of articles from the literature search, creating a list of potential interviewees. From this list, 24 emails were sent, resulting in 5 interviews, due to non-responses or scheduling issues. To enable a minimum of 12 interviews to take place, snowball sampling was then employed, looking for authors of articles who had cited the literature identified as important to degrowth urban mobility, with the reasoning that these authors would have knowledge of either the field of degrowth or urban mobilities if they had cited these papers. A further 42 potential interviewees were identified and emailed, which resulted in a further 13 interviews, with the rest being non-responses, declinations, or scheduling issues. A total of 18 interviewees was within the acceptable limit, set out at the beginning of the research of 12-20. An anonymised list of the interviewees can be found in table 2, with names replaced by the position and country of the institution that the interviewee had at the time of the interview.

Table 2 List of Interviewees

Interview number	date of interview	Referenced Name	Position	Background	Interview Guide
1	04/04/2023	Interviewee 1	PhD candidate	Civil Engineering	1
2	06/04/2023	Interviewee 2	Post doc	Sustainability/Engineering	1
3	06/04/2023	Interviewee 3	PhD candidate	civil engineering	1
4	11/04/2023	Interviewee 4	Prof	ecological economist (degrowth)	2
5	11/04/2023	Interviewee 5	post doc	Environmental modelling	2
6	11/04/2023	Interviewee 6	PhD candidate	civil engineering	2
7	13/04/2023	Interviewee 7	prof	economic geography	2

8	14/04/2023	Interviewee 8	post doc	civil engineering	2
9	18/04/2023	Interviewee 9	prof	Sociology	2
10	19/04/2023	Interviewee 10	post doc	Engineering/sociology	3
11	20/04/2023	Interviewee 11	prof	engineering	3
12	24/04/2023	Interviewee 12	Prof	urban planning	3
13	25/04/2023	Interviewee 13	Prof	civil engineering	3
14	25/04/2023	Interviewee 14	Prof	geography	3
15	26/04/2023	Interviewee 15	PhD candidate	urban studies	3
16	26/04/2023	Interviewee 16	PhD candidate	geography	3
17	27/04/2023	Interviewee 17	PhD candidate	urban planning	3
18	28/04/2023	Interviewee 18	PhD candidate	civil engineering	3

Due to time constraints caused by the difficulty in finding interviewees, as well as the subject matter remaining close to the interviewees competencies, a decision was made to use the same interviewees from SQ1 to provide the interviews for SQ2. This is justified, as since the interviewees were all connected to degrowth and urban mobility, as well as working for institutions, they met the requirements of a study into institutional engagements with degrowth urban mobility.

### 3.3. Data Collection

The research contained two main forms of data collection: literature searches, and semi-structured interviews. For the literature review, two online databases of academic studies were used to collect the data, Web-of-Science (<https://www.webofscience.com/>), and Google scholar (<https://scholar.google.com/>). The use of two different databases allowed for slightly different results, in particular Web-of-Science focuses on purely academic sources, whereas Google Scholar also contains grey literature, allowing a wider view of the subject to be taken. Initial searches for keywords, table 1, were carried out on Web-of-Science, due to it having export options which allowed more thorough analysis of the literature collected, this was then followed up with the same search on Google scholar, to locate papers that the Web-of-Science search missed. Due to the lack of an export feature on Google Scholar, only the first 50 results were collected in instances of more than 50 results occurred, this affected 3 of the searches, where the search terms overlapped with a branch of crystalline chemistry papers, a similar issue was seen in the collection of the Web-of-Science results.

To allow for the widest range of scholars to be interviewed, the option of on-line interviews, using Microsoft Teams or Zoom, were offered to each of the interviewees. The interviews themselves were designed to take an hour, although in practice they ranged between 45 minutes and 90 minutes, depending on the availability of the interviewee. In total, 17 of the 18 interviews were conducted on-line with the interviews recorded and transcribed using auto-transcript tools associated with the video conferencing methods mentioned. The final interview was done in person on location, and recorded using a mobile phone application, and auto transcribed using Microsoft Word. All transcripts were later manually checked for consistency, so that they may be accurately analysed within the research.

The interviews themselves were conducted in a semi-structured format, allowing for flexibility in the script which was desirable due to the differences in the types and depths of knowledge on degrowth and urban mobility present among the interviewees, and for generating emergent insights for SQ2 (Clark et al., 2021). The interview guide itself was initially constructed to be a balance between investigating SQ1 through questions on degrowth urban mobility and investigating SQ2 through questions on institutional barriers to this work. In the case of a lack of knowledge of one these areas, definitions of urban mobility and degrowth were found, which could be used to prompt further discussion if necessary. As identified in the research design, during the initial interview's themes pointing to a different direction of research emerged, which caused the interview guide to be rewritten to better capture the information. In total 3 base interview guides were used in the study, although the section relating to SQ1 remained similar throughout. The second script added questions on the university element, replacing some of the more general questions from the first script, although one or two questions on general stakeholders remained. The final script was created with 50:50 on degrowth urban mobilities and university's once the optional questions were removed. This final script focused more

on the exact role of university and their engagement with urban mobilities, to generate further insights to answer the second research question. The three interview guides can be found in Appendix A, 1-3, and a list of which interview guide was used for which interviewee can be found in table 2.

### 3.4. Operationalisation

In total three analyses were carried out: one for SQ1, one for SQ2, and one on the main research question. Since SQ1 looks to investigate the themes of degrowth urban mobility, the main operationalisation factors are that the output must be connected to both the degrowth and urban mobility literature. This means that the concepts behind the themes presented must mention a degrowth element, and an urban mobility element. By using the keywords in table 1 as a top-level guide, themes that come out of the analysis should be able to be traced back to the social degrowth frame or the mobility frame, e.g., the theme sufficiency is a first level descendant of the degrowth theme (D'Alisa et al., 2014).

SQ2, aims to develop a framework for how the university interacts with degrowth urban mobility. Operationalisation of the interviews will concentrate on measures which identify an institutional response to an aspect of degrowth urban mobility, as generated in SQ1. For the institutional side, this will be operationalised through interactions with the university, from members of any of its faculties, including HR, management, or departmental. For interactions, this will be based on occasions where the university could be seen to have made an interaction with a degrowth urban mobility proposal, such as research. However, this may also include indirect interactions with degrowth urban mobilities, such as funding. The framework to be constructed will be operationalised by having a solid theoretical foundation in degrowth and institutional, which will develop the framing for the main RQ.

### 3.5. Data Analysis

The literature search was conducted using the semi-systematic format as outlined in Snyder (2019) and by Wong et al. (2013), a full list of the search terms and processes can be found in Appendix B. The initial results from the keyword search of Web-of-Science literature produced 530 papers, which were exported to Microsoft Excel for further refinement of the results. During the search it was noticed that the terms 'post-growth' when paired with 'transport' or 'mobil\*' produced much higher results than other searches, this was due to these terms also being associated with crystalline chemistry, which inflated the number of results significantly. To refine these results conditions were imposed on the literature, consisting of the tasks noted in figure 3.

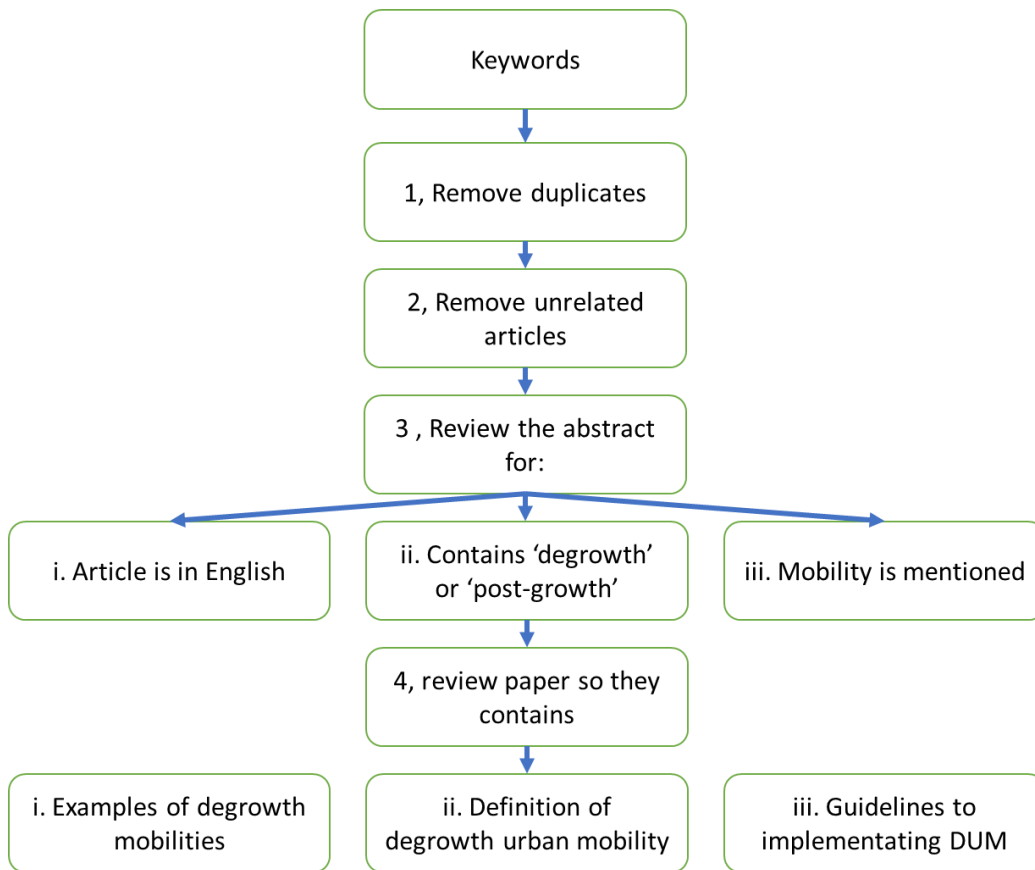


Figure 3 Diagram of Semi-systematic Literature review

Step 1 was to remove duplicates from the literature searches, the 2<sup>nd</sup> step was to remove any articles, such as those on crystalline chemistry, which were unrelated to degrowth, post-growth, or mobilities. The 3<sup>rd</sup> step was to review the abstracts of remaining articles for three indicators, such that the remaining articles would be comprehensible, and be relevant to the field of degrowth and urban mobility. A 4<sup>th</sup> step was added after reviewing the remaining papers and finding a lot of the literature only briefly mentioning urban mobilities or was connected to degrowth through population in places such as Detroit. These same steps were then completed using Google Scholar, which added an additional 12 articles to the list, for a total of 18. Once this was completed, step 5 was used to check for the completeness of the search, by identifying keywords from the articles and if they occurred more than twice across all articles, a further search would be undertaken to identify missed papers from the relevant keyword. No keywords other than the ones having been search for had more than 2 occurrences, therefore no additional keywords were searched for, with a full set of the articles listed in Appendix C.

Once the relevant papers had been identified, they were exported to the qualitative analysis software Nvivo, to be analysed using thematic analysis. Thematic analysis was preferred over other qualitative analytical frameworks, as it allows the coding of the main themes of an article to be identified, which can be used as the building blocks for generating a theoretical perspective. To do this, the approach from Braun & Clarke (2006) was followed, the papers identified were first read for familiarity, and then initially coded for themes, with these themes being grouped into higher order codes, which produce the themes of what degrowth urban mobility is. This also allowed for the identification of incomplete themes, which could be followed up on by the interviews, which were conducted at a later date.

Once the interviews were transcribed and checked for accuracy, they were also exported to Nvivo for analysis. The analysis of the interviews took place in two separate Nvivo files, to separate the research questions. SQ1 used thematic analysis, following the same procedure as identified for the literature review. This was done in part, to allow consistency to be maintained across both the literature review and the interviews, but also because it was seen as the strongest analytical method for this analysis. For SQ2 analysis, thematic analysis was also used, as a preferred method for generating theory from qualitative studies. The approach followed that Braun & Clarke (2006), which proved to be insightful, as the initial familiarisation of the data allowed the research to narrow its focus early and improve the data collection for the final research question.



### 3.6. Research Quality Indicators

The research quality indicators for this research can be broken down into the three constituent research questions. For SQ1 the main research quality indicators relate to the documents and interviewees sought. For the literature review, replicability was seen as an important research indicator, which is the reason that the semi-systematic method has been used. However, it was also noted that much of the literature on degrowth urban mobility is difficult to categorise without some level of subjectivity, due to fleeting mentions of the keyword terms within the literature, and a lack of articles solely based on the subject. Using the semi-structure method, is therefore a compromise between replicability and providing a sufficiently wide literature pool from which to analyse the data. Additionally, to improve on the scope of the research, once the final papers were collected, an analysis was completed on the types of keywords used for these papers, with any new keywords with more than 2 entries, being search for.

For the interviews for both questions, a wider range of views would have aided in constructing a stronger thematic outlook for degrowth urban mobility as well as a stronger framework for interaction with the university. Ideally the interviews for SQ1 and SQ2 would have been separated which would have allowed for more time in constructing the interview scheme for SQ2, this would also have potentially seen a wider range of views of the interaction of the university for degrowth urban mobilities. Additionally, a balanced look at the subject would have looked at more views from outside developed countries, and have included a higher share of Female researchers, to give a more diverse background to the research. Unfortunately, due to the limitations of a 31.5-week timeslot, many of the interviewees from these backgrounds were not able to participate in the research during the times available for the interviews. This same timeslot issue also prevented different interviewees from being included as part of the research for SQ2. Finally, since the views taken were from such a broad range of countries, the framework generated in SQ2 may be too generic, and to be applicable to local contexts, may need additional refinement.

### 3.7. Ethics and Privacy

Before the interviews, all interviewees were sent a consent form, example in appendix D, asking to be part of the interview and asking that the data can be used, which were signed and returned by all participants. Additionally, at the beginning of each interview, participants were reminded of the obligations stated in the consent form, and asked permission to start recording the interview, and finished with a reminder that they can remove consent at any time before publishing.

To ensure privacy, most personal data from the transcripts has been removed, the identifiers which have been left in the document refer to the position within the institution they are working for and gender, which was used as a quality indicator. Interviewees are therefore numbered in the text by order of interview date, as seen in table 2. This has been done to allow for sensitive views to be given in confidence during the interviews, but also because the analysis points to general themes rather than with specific establishments as the interviewee positions and institutions are so varied. Therefore, any example transcriptions or quotes from these interviews with information which could be used to help identify that person or their institution has been removed and replaced with generic information, to protect the interviewees identities.

At this stage it is expected that no deception took place during the study, with all interviewees being aware of the aim of the study. In addition, interviews were conducted in an open format, which allowed for the interviewees to ask questions if they wished to have more information on a subject, or clarification.

## 4. Results

### 4.1. What are the Themes of Degrowth Urban Mobility?

The following results are the themes which were identified from both the literature search and the interviews with scholars. Due to the difference in density between these two formats, there were more literature codes than interview codes. However, both sources were used to find insights into the themes that make up degrowth urban mobilities. These conclusions will be briefly summarised, with supporting sections providing more detail about the conclusions thereafter.

Degrowth urban mobilities are a complex set of differing systems, therefore there are several different angles from which to view this complex subject. The first theme identified through the research is that degrowth urban mobility is a counter to the hegemony of growth mobilities which currently infects most people's view of urban mobility. It attempts to do this through its second identified theme, by trying to balance the inherent tensions within degrowth urban mobility. These tensions are apparent within degrowth as it encourages urban areas to be more focused on sufficiency, and as such, embrace a more rural outlook. Yet degrowth urban mobility advances the desire for dense spaces to reduce the mobility metabolism. This constant need to balance tensions, prevents degrowth urban mobilities from succumbing to one dominant position, because it must constantly challenge itself. Due to this, by applying a degrowth urban mobility outlook to an area which is dominated by a growth-focused outlook, degrowth urban mobility will seek to break that hegemony, in favour of restoring a balance.

A third theme is that degrowth urban mobilities reject techno-optimism, while not being necessarily anti-technology. Techno-optimism is a concept utilised by, among others, the green-growth community, to promise that the environmental and social problems that we now face can be solved through future innovation in technologies. Examples of these are carbon capturing devices and electric vehicles. Degrowth urban mobilities take the view that the future is not soon enough. Additionally, they argue that we have all the technology necessary today to be self-sufficient, in a more equitable manner than under green growth. However, degrowth urban mobilities are not anti-technology. It recognises that there are vulnerable groups of people, as well as longer journeys, which require mobility options that do not solely rely on human power. What degrowth urban mobility asks for is that these mobility options be sufficient for the task, not opulent, and that they are shared with others to spread that accessibility and the cost, both monetarily and environmentally, of doing so.

The final theme uncovered by the research is that degrowth urban mobility offers a chance to reimagine the urban experience. It is the starting point to remake the urban plan, to remove unnecessary infrastructures supporting opulent methods of mobility, to make urban spaces quieter through the removal of heavy vehicles, and to make the space more equitable for all. In reclaiming the urban space, degrowth urban mobility offers the opportunity to rethink how urban society is constructed. By turning these spaces liberated from opulent infrastructures, into spaces where people can meet, spaces where they can grow, and spaces where they can play. It could help make places which reject the notion of social acceleration and embraces resonance with the world.

Degrowth urban mobilities is a vision of what the future might be, of what we might leave to the next generation if given the opportunity.

#### 4.1.1. A Counter to the Hegemony of Growth Mobility

With growth and mobility being so tied together, it is perhaps not a surprise that one of the main themes uncovered during the analysis of the literature and interviews is that degrowth urban mobilities are a criticism of growth-based mobility (Ferreira & von Schönfeld, 2022). While this theme is often blatantly stated, it is also shown to be quite insidious. The concept of growth-based mobility permeates mobility and its support structures, influencing the indicators used to measure 'good' mobility and prioritising efficiency over everything else (von Schönfeld et al., 2018).



*“The problem is that that we use the [value of travel time] of the transportation system rather than [the transportation systems] goal (...) so that, every travel time reduction leads to more travel in terms of distance because people still allocate more or less the same amount of time for travelling, so higher speeds.” – Interviewee 6*

This expresses the futility of the growth mindset towards mobility, as these travel time savings are often theoretical since it encourages more travel, leading to congestion (Cattaneo et al., 2022). Another side-effect of the growth-based indicators is that with the monetisation of time, these indicators based on time savings, prioritise mobility options for the wealthy in society (Dillman et al., 2021; Spanier & Feola, 2022). This has created a patchwork of inequalities across urban environments, with those living in high value areas having access to quick, efficient mobility choices (de Blas et al., 2020; von Schönfeld et al., 2018). In contrast, the less well-off within the urban environment live in polluted areas where automotive traffic has been diverted or close to delivery warehouses. Because of the lower value of their time, have less access to mobility options leading to many people living in transport poverty. One interviewee gave an example of how some people can live close to certain mobility options but still not have access to them:

*“There is double discrimination, of poor people in many cases who often live in those places which particularly suffer from air pollution, for example, while at the same time they are in conditions of benefitting to a lesser degree from our mobility systems. So maybe they don't have the money to have a car, but they live close to streets with a lot of car traffic.” – Interviewee 15*

Even where modern urban planners try to enact change, the baked in inequities of the system are revealed. Areas which undergo redevelopment with a focus on creating lower mobility neighbourhoods within walking distances of amenities are focused on wealthier neighbourhoods (Xue, 2022). Even where planners attempt to create equity and build these neighbourhoods in neglected areas, they become desirable places to live. Thus, residents are eventually displaced to other, less desirable places in the city through gentrification (Ferreira & von Schönfeld, 2022). When this happens, they go back to needing to rely on their own personal automotive transport to meet their everyday needs, again adding to the problem. A phrase that was used in one of the interviews and shows the extent to which we now equate these low-traffic neighbourhoods with gentrification is:

*“I mean I have very much a privileged life. I don't own a car.” – Interviewee 11*

It is not only individuals that perpetuate this problem. The state also has a large role to play in other sections of society in order to address this inequity in where people live and their mobility options:

*“In turn, high land values constitute a key driver of social exclusion and housing precarity. Even though this can be partially addressed by state- sponsored measures aimed at stabilising housing prices, the present trend is for governments to facilitate the conversion of real estate into financial assets, which are then speculated upon by both the state itself (through taxes) and global investors (through rents and mortgages)” – Ferreira & von Schönfeld, (2022, p. 83)*

So, if we want to make urban mobility equitable for all, changes need to happen across all parts of society to help facilitate that change (Prieto & Domínguez-Serrano, 2017). Instead of applying these retroactive fixes to the externalities of the growth-based economies, degrowth at its heart contains policies surrounding the need to ensure that there is justice in any mobility change. For lower income groups associated with the types of issues discussed

here, this involves ensuring that measures of accessibility are used, to ensure that people have access to their needs using mobility options which will also respect the planetary boundaries (Xue et al., 2017).

This application of justice also extends to groups who have experienced the injustice of growth based mobilities. An example of this are women, who due to taking on responsibilities of care within households tend to have more stops on their journeys (Cattaneo et al., 2022). These types of journeys are not currently well supported by the mobility options available due to their emphasis on speed and efficiency. In a degrowth outlook, these mobilities are also captured and considered. An example of women's experiences was given by one of the interviewees:

*“we see women for in [Redacted]. I'm not sure about the data for other countries, but in [Redacted] women are the main user group of public transportation, and they are whatever happens with public transportation, affects women. So if it's for the better, then of course they get better. If it's for the worse, which is far more frequent, then they get affected.”* – Interviewee 4

So, a future mobility paradigm for degrowth takes on the view that they must be socially just. However, degrowth urban mobilities also acknowledges that societal justice cannot be prioritised over environmental justice in this debate without leading to justice issues for the other, and vice versa, without leading to issues for the other (Dillman et al., 2021). As one interviewee put the current relationship of growth towards this balance:

*“Like economic growth from resource consumption or even saying more radically, economic growth shouldn't be the goal. It's unsustainable. An Organism that grows uncontrollably has cancer.”* – Interviewee 3

Since a growth focused mobility system only values economic wealth, it can never realise social or environmental justices, thus perpetuating the damage. By ingraining the ideals of societal justice into its framework and by balancing that with environmental concerns degrowth urban mobility seeks to offer a better mobility future for the majority, not just those who have the most value. In doing so, degrowth urban mobilities shun growth-centric measures and suggests that other paths are available, and viable.

#### 4.1.2. A Balance of Tensions Within Degrowth Urban Mobility

Another theme present within the analysis of degrowth urban mobility, is the presence of tensions within the framework itself. These tensions almost seem baked into the degrowth strategy from the start. While Dillman et al. (2021) chose to view this as finding the corridor between the tensions, another outlook would be that degrowth is a seesaw balancing environmental and social concerns at either end. This balancing act means that whatever societal goods are required to sustain human needs, must be produced within the planetary boundaries, including the actions involved in getting those needs to the places they need to be. To not do so risks upsetting this balance which can have consequences:

*“The impact of ecological stress, for example, climate change, can actually exacerbate social problems, such as poverty. This can occur vice versa as well, where if environmental policies are established based on analyses that fail to capture the multi-faceted complexity between environmental and social issues, these policies could potentially stagnate social equality”* – Dillman et al., (2021, p. 1)

This point of balance between the social and the environmental needs is to reach what Dillman et al. (2021) termed as the sustainable consumption corridor:

*“Defined the Ecological ceilings as the maximum consumption standards acceptable before the environmental impact of this consumption threatens the ability for others to live safe and good lives, and social floors are defined by the minimum consumption level that individuals now and in the future require to adequately satisfy their needs. The space between these two levels then defines the corridor for sustainable consumption corridors in general. These definitions will be used as the basis for our development of ecological ceilings and social floors.” – Dillman et al. (2021, p. 3)*

By introducing this concept of degrowth to urban mobility, it sets a ceiling and a floor for the mobility option. A mobility floor in that the mobility options must allow people to meet their needs, and a mobility ceiling, which means that these mobility options do not damage the environment. Part of the difficulty in balancing these extremes, is that indicators which balance the degrowth urban mobility seesaw, can upset the balance of an adjacent degrowth seesaw. An example of this can be given by promoting accessibility through proximity as a way of improving degrowth mobility outcomes:

*“Enhancing accessibility thus focuses on de-escalating need satisfiers by reducing the amount of travel required to meet human needs” – Dillman et al. (2021, p. 6)*

By increasing accessibility by proximity, the amount of energy needed to power mobility options to reach places to fulfil needs drops (Cattaneo et al., 2022). This in turn, increases the equity of the populace, and reduces the energy demand, and therefore the environmental externalities. This is the ideal outcome of degrowth urban mobilities, managing to find a balance between the social and the environmental. However, concentrating people in urban areas where they can meet their needs runs into problems connected with other branches of degrowth. For example, having more people concentrated in a smaller area means that the goods that are consumed there will need to be produced somewhere else, as Alexander & Gleeson (2019) describe:

*“Urbanisation depends on the natural environment for resources, well beyond its physical footprint, siphoning resources from the global periphery into the urban and suburban centres.” – Alexander & Gleeson (2019, p. 62)*

The degrowth urban mobility approach of having people closer together in order to reduce the distances needed to travel assumes that the goods used to satisfy human needs are all produced there. This is impossible for an ever-concentrating population with the accompanying increasing needs. Instead, another form of degrowth calls for a less dense society, one which calls for more space between people to allow them to meet their own needs through production on this land (Khmara & Kronenberg, 2023)

So, concentrating people into urban areas is also not to be a solution to be relied upon, given the environmental externalities that an increasing population has (Xue, 2014). If the opposite view is taken, and space within urban areas is reallocated so that it becomes entirely self-sufficient, the accessibility to those places needed to sustain human needs lowers, and further distances must be travelled to access them. These distances would likely be greater than those accessible by human power (Cattaneo et al., 2022) and so require more mobility options, with accompanying infrastructures to support them. Even by moving towards less impactful mobility options, such as electric vehicles will still create environmental problems (Cattaneo et al., 2022). However, despite these challenges, business as usual is not an option:

*“And another point this that's like I'm really, worried or concerned about the climate crisis and biodiversity crisis. And I think that in transport, right now in the world. There's a lot still going in the wrong direction (...) We have reduced*

*CO2 emissions in other sectors, but not in transport and decisions taking today still go in the wrong direction. So I feel like it's a field where there's still a lot to do.*" – Interviewee 18

So, there is no singular way to realise a degrowth future for urban mobility without it impacting other societal aspects of degrowth negatively. Instead, as with the sustainable consumption corridor, degrowth urban mobilities must constantly be trying to strike a balance with the other systems it encounters. Sometimes it will need to employ mobility options which do not seem to conform to degrowth urban mobility but when paired with other degrowth systems leads to humanities' sustainable consumption corridor.

#### 4.1.3. A Warning against Techno-Optimism but not Anti-Technology

As a society well ingrained in the hegemony of growth-based economics, certain outlooks have been allowed to engrain themselves in the psyche of many people. One of the most influential ideas that the growth-based economy uses to maintain itself is techno-optimism. This view concerns the belief that no matter the issue that humanity faces, it can be overcome through technological innovation and improvement. The idea of techno-optimism and innovation are tightly bound within growth, as innovation promises new, improved technologies in an effort to sell more products and generate more growth (Alexander & Gleeson, 2019). This can be seen in the modest 'innovations' in phone generations, which launch year after year in an attempt to increase sales. Green growth also follows this course by espousing the view that by using technology to increase the efficiency of devices and inventing new technologies capable of sequestering carbon, or in extreme cases geoengineering, humanity will be able to continue with the growth-based economy, whilst decoupling this production from externalities (de Blas et al., 2020; Schmid, 2022). This belief in innovation as a saviour can be seen in some of today's celebrities:

*"I mean you still have this kind of very strong belief that the technology will save us that Elon Musk and or some other white male will come up with some energy source or perpetual mobility or I mean basically what we will come up with a way that emissions will disappear."* – Interviewee 14

This worldview is also present in green growth's view of urban mobility, which promises new technologies which will decouple the impacts of mobility modes from their externalities, without needing further societal changes. For example, as one of the interviewees brought up, by swapping the engine powering cars from the internal combustion engine to an electric motor, manufacturers are promoting electric vehicles as a guilt-free way to continue to enjoy current mobility habits without damaging the planet. This is something Alexander & Gleeson (2019) mention as techno-optimism's method of distracting from the need for a mobility transformation:

*"If fossil fuels are causing problems then the suburban way of life we know today can still survive, provided that 'green energy' comes to replace the fossil energy foundations of the economy. The same attitude shapes thinking about urban and suburban mobility: if the internal combustion engine—the definitive enabling mechanism for suburbia—is causing problems, then we do not need to give up the private motor vehicle or the way of life it enables, we just need to drive electric cars."* – Alexander & Gleeson (2019, p. 63)

Degrowth rejects this view, as degrowth has noted that resource use in many places is already outside the planetary boundaries, and replacing fuel burning cars with a like for like alternative will not lead to environmental or social balance. By only focusing on one aspect of sustainability, techno-optimists try to obscure wider problems with maintaining the current mobility system:

*“Because even if we are talking about electric mobility, I still believe that it is not very sustainable because at least in [Redacted], we produce electricity out of coal. Steel, yes. Mostly 90% is out of a coal and you know the batteries and so on and so on. It is, you know, we are showing that we are doing something. We are aware, but actually we are not solving all the problems..” – Interviewee 7*

Indeed, in the case of electric vehicles, while primary emissions from the engine may be reduced from standard cars, looking at their effects on other planetary boundaries leaves the picture less clear, as electric vehicles contribute to water pollution, contain more raw materials, and do not address the existing social issues attributed to automotive transport (de Blas et al., 2020). By looking at the entire environmental impact of electric vehicles, it can help people realise that this is not the solution it is presented as:

*“We know for a fact that electric vehicles, OK, it's some kind of 1/2 step towards solution, but they don't solve, 5% of the problems that current cars make. I mean, you still have so many issues with how emissions are generated at the moment of production and probably less at the moment of consumption, yes, but it's still is a vehicle that takes space in urban space. These vehicle gets bigger every year. The batteries are not recycled and all this.” – Interviewee 14*

By taking a view of these wider environmental and social impacts degrowth exposes the issues left unsaid by techno-optimism. However, there is a second way in which techno-optimism infects the psyche, and that is the promise of something better. Techno-optimism makes promises that it often cannot keep but are so enticing that most people are content to wait and see if the solution happens (Alexander & Gleeson, 2019). Currently, as the world battles for a response to climate change, the response of green-growth is to promise a future with carbon sequestration at a scale large enough to reverse any human-created emissions (Alexander & Gleeson, 2019). This distraction causes policymakers to believe that there is no need to change the current situation, improperly allocating resources, and more importantly time in the process (Ferreira & von Schönfeld, 2022).

The degrowth outlook is that these solutions, if they ever appear, will be too late and will not combat the roots of our current problems (Ferreira & von Schönfeld, 2022). Degrowth promotes the notion that the best time to combat climate change was yesterday, and the second-best time is today, and there is no room to delay taking action. Secondly, degrowth understands that to fully combat environmental problems, the societal issues must also be addressed. Otherwise, these will lead to the same or similar issues we deal with currently. Degrowth promotes using the technology and knowledge we have today to fight this known problem, to start implementing solutions to reduce environmental problems from urban mobility whilst creating a more equitable mobility system for all (Alexander & Gleeson, 2019; Cattaneo et al., 2022). To achieve this degrowth needs to battle not only the growth-based hegemony, but also its enablers like techno-optimism, which can even affect the academics:

*“This brings the risk of thinking about, we need to use new technology when instead, the technology we need is just what people are born with - their feet. So they should walk more..” – Interviewee 18*

But does pushing back against the idea of techno-optimism, also mean that degrowth pushes back against technology as a whole? From an environmental standpoint, utilising active travel within local areas would bring about the best outcomes (Cattaneo et al., 2022). However, the social needs aspect of degrowth urban mobilities means that people need to have access to places where they can satisfy these needs, even if they have mobility issues. To be able to meet the needs of everyone in an equitable fashion, degrowth cannot solely rely on active mobilities, but look to what Alexander (2017, p. 172) calls appropriate technology.

Appropriate technology means that it adheres to the sustainable consumption corridor (Dillman et al., 2021). In this way, some studies have attempted to rank mobility outcomes based on their suitability for the sustainable consumption corridor (Cattaneo et al., 2022). Within the degrowth urban mobility frame, this means the use of

convivial mobility options over private options, and mobility option which consume less resources such as bicycles or e-bicycles, over private vehicles (Alexander, 2017; Cattaneo et al., 2022).

This allows the ‘appropriateness’ of a technology to be explored, so while private electric vehicles are seen as not consistent with degrowth principles, shared electric vehicles are better, since less resources would be needed to support mobility needs, and shared electric bicycles would be better yet. The idea is that the technology must be appropriate to give sufficient accessibility to human needs, without becoming excessive.

So, degrowth urban mobilities while being anti-techno-optimistic due to its links to growth-based innovation and distortion of the response to climate change, is not necessarily anti-technology. What degrowth urban mobility calls for are appropriate technologies which allow people to fulfil their needs.

#### 4.1.4. A Chance to Remake the Urban

Through the lens of techno-optimism, growth also makes it difficult to imagine a world in where it does not dominate people’s lives. Therefore, one of the goals of degrowth is to create an imaginary for people to believe in and create a future free from growth (Cattaneo et al., 2022; Khmara & Kronenberg, 2023). By changing urban mobilities from a growth-based system into one centred around principles of degrowth, it gives people the opportunity to imagine how the urban environment might be, and in doing so gives the opportunity to strive for a system free of growth. Degrowth urban mobility can contribute to this imagination in two ways, by helping people imagine a city free of growth based mobilities, and by helping them imagine an urban society without growth.

##### 4.1.4.1. A Chance to Remake the Urban Plan

The current urban plan of cities and urban areas are heavily influenced by the growth-based planning ((Ferreira & von Schönfeld, 2022). The growth economy’s need for faster, more efficient travel has led to urban areas which are space inefficient, unjust, and polluting, with many areas feeling designed more for cars than for human activities as one interviewee explains:

*“The more transport infrastructure that you build, and especially if it’s more spread and built for cars, this then spreads their own form, and makes things perhaps even more difficult to reach. And then it creates this kind of sprawled structure.”* – Interviewee 2

A future where degrowth urban mobility becomes the dominant form will seek a balance between accessibility and environmental consequences, reducing the amount of infrastructure dedicated to mobility. The idea that an excess of private vehicles within urban areas results in poorer societal returns is not new, as one interview recalls, a similar reclaiming of urban space took place in the past:

*“Starting in the 1970’s, when pedestrian precincts were reintroduced slowly in European urban centers, which they have been until, the late nineteenth century, more or less. And then we had some 50 to 60 to 70 years of car craziness all over the city and then people say. Okay, yeah, maybe that wasn’t the best idea.”* – Interviewee 8

Degrowth urban mobilities would take this reclamation of the urban space further, by prioritising mobility options such as bicycles and E-scooters, the amount of area needed for mobility infrastructure would reduce (Cattaneo et al., 2022). This space is then free to become part of the urban fabric, to be transformed into a space of communal use, such as a public allotment, or rededicated to nature, perhaps helping cities to become more self-sufficient (Xue, 2014).

Experiments with these ideas are currently ongoing with some success. Several interviews cite 15-minute cities, where people have the ability to meet their needs with a 15-minute bicycle ride, as being successful in places such as Paris and Barcelona. These ideas seem intuitive, however, without the imaginary available, even academics are sometimes taken by surprise:

*“it is so intuitive, the idea is so simple that the most basic services should be near. You should be able to get there by walking or cycling. The big core idea is so simple. Of course we can debate whether it's 15 minute or whether it's 10 minutes or 20 minutes or whatever like the exact minutes. But I really like it.” – Interviewee 16*

Once people realise what the city could look like without private vehicles creating barriers between communities, and causing noise, air, and water pollution, it becomes hard to go back to that view. Just as many people cannot imagine city centres colonised by cars, degrowth urban mobility wants to create a future where people cannot imagine the urban environment dominated by its mobility options. And with this imagination unlocked, perhaps people can find new ways of reconciling the differences between different forms of degrowth, allowing the urban to become more sufficient, without impacting degrowth urban mobility goals.

#### 4.1.4.2. A Chance to Remake Urban Society

Another way in which degrowth urban mobility could reshape the urban environment, is by giving people the chance to imagine a different society. While degrowth urban mobility would bring positive health benefits through more active travel (Cattaneo et al., 2022), it may promote further changes. A change to a society based on sufficient mobility, and convivial mobility options, may help lead to a renaissance in community, which growth has suppressed (Prieto & Dominguez-Serrano).

With a population that moves more slowly, there are suggestions that perhaps deeper changes may occur from society. While Cattaneo et al. (2022, p. 461) mentions Ilyich's theory of conviviality and the hope for a renewal of community, Bertolini & Nikolaeva (2022, p. 66) discuss Hartmut Rosa's theories of a good life. Rosa theorises that due to the fixation on economic growth and speed, what he calls social acceleration, people are now more disillusioned with society than before (Ferreira & von Schönfeld, 2022, p. 84). By moving to a society based on equity and environmental metrics he theorises that this could be reversed as people regain their connection to nature, people, and places (Bertolini & Nikolaeva, 2022, p. 77).

This reconnection to nature and community could help strengthen the idea of degrowth urban mobilities, since research suggests that those with access to nature are happier people and more likely to protect it.

## 4.2. How can Universities Interactions with Degrowth Urban Mobilities be Conceptualised?

The second sub-question was investigated using the cyclic inductive approach described in the method section to generate a framework to evaluate how universities are engaging with degrowth urban mobilities. This was investigated through interviews with academics active in degrowth and urban mobility research and currently employed at a university. During the interviews, pre-coding of the themes allowed emergent data to be found within the interviews and narrow down the research question. During this process, it was seen that the academics spoke most prominently about their interactions with their academic institutions. Using this insight to focus the interview scripts, helped find a framework for how the university can interact with degrowth urban mobility.

The framework for USR as derived by GUNi (2014), looks to view the university as a source of societal change, from which it can influence the social sphere through its four identified impact areas, 1. Educational, 2. Cognitive, 3. Social, and 4. Organisational. By deconstructing the main elements of the framework, it has been turned around to be able

to show how societal needs impacts the university. This is in preparation of the framework being tested in the following section.

#### 4.2.1. The Cyclic-Inductive Process

The method used to investigate a framework for analysing how universities engage with degrowth mobilities was a cycling inductive one, which is atypical for research. This process produced three different interview guides, listed in Appendix A, which allowed the themes emerging from the interviews to be converted into a coherent theory. The list of which interviewees were interviewed with each of the interview guides can be found in table 2.

The first three interviews were carried out using the first interview script, Appendix A.1. These interviews were initially looking for data which could support a framework for to use for wider decision makers, however during the responses to these questions, much stronger themes started to emerge from the academic's relation to their universities, such as this example when asked about the use of alternative indicators in classes:

*"I would say it probably depends on the school, who the professors are, what their line of teaching and thinking is. I mean, I know for sure at the University of [Redacted], I work with the Professor who's teaches the urban planning course, for example. And so he definitely embeds this and this. But, you know, we've also been kind of working together on this project and been thinking about this for a few years. So, you know, he obviously has the mentality to do that."*  
- Interviewee 2

Which was already a rich answer, but the interviewee had more to say on wider challenges for the degrowth urban mobility approach:

*"Then maybe if you go to the US and someone who's barely been thinking about, agent-based modelling and efficiency of transport systems and stuff that maybe they're much more just thinking about, you know, how do we reduce time."*  
- Interviewee 2

This answer produced several rich themes in how the university is interacting with ideas surrounding degrowth, as well as views on other institutions. But when asked about social impacts of degrowth mobility, the conversation came back to an academic basis:

*"You know, I think these social aspects, I mean, it does make a huge difference and I mean that's what we try to capture with some of our indicators that like it and that's where I think, I don't know if people looked into what's transport poverty research" – Interviewee 2*

So even the questions that were not focused on the academic research, managed to come back to the view of research connected to the university. This interaction was similar for the other interviews conducted with the first interview guide. This focus on the university became quite clear, which then informed the direction of the research more towards universities and academia. To better capture this, a second interview guide was used, appendix A.2, which leaned into this insight more, by focusing more questions on the university.

It was during this set of interviews that the main themes which were to inform the framework became apparent. While the first set of interviews has discussed themes related to degrowth urban mobilities and the education and research done by universities into this the next set of interviews started to lean into other aspects, such as the management



structure:

*“I mean, at institutional level of the university, there is not too much importance for this [sustainability outcomes].” – Interviewee 5*

And then also the outreach aspects of the university:

*“I mean the situation is very bad, but the general, the society is not aware.” – Interviewee 5*

Once these four themes of education, research, management, and outreach were noticed within the interviews, they started to be seen in each of the subsequent interviews, as well as in the previous interviews. To best capture these views, a third interview guide, appendix A.3, was constructed to better investigate the positioning of these four aspects within the university structure.

By the end of the interview process, the names of the themes had changed but the essence of these had not, in almost every interview themes had emerged which related to different aspects of the university, in cognitive, educational, organisational, and social role. This was the basis for the generation of the framework of how universities engage with degrowth urban mobilities.

#### 4.2.2. Theory Behind the Framework

The interviews identified four major themes in which the university interacts with degrowth urban mobility, these being through, 1. its research, 2. its educational function, 3. its social outreach and, 4. its organisational structure. A literature search found two studies which use a similar nomenclature. The first by Stephens et al. (2008), explores universities as change agents within society, noting that they can accomplish this through their cognitive, educational, social, and organisational impacts, but did not contain a specific framework. The second article was part of a guide by UNESCO on the social responsibility of universities (GUNi, 2014). This article provided a framework which used the four themes identified in the interviews to examine the impacts that different areas of the university can have on society, figure 3.



Figure 4 Social Responsibility of Higher Education Institutions (GUNi, 2014)

The GUNi framework has been briefly described in the theory section, section 3.4, but will be described here in more detail. The GUNi framework describes the social responsibilities of the university to contribute to the well-being of its community, which several authors believe universities have a responsibility for (Boyer, 1996; Dzimińska et al., 2020). The desire for universities to be more socially conscious was first described by Boyer (1996), due to his observations that the university was neglecting its local communities and had become part of the societal problem. He founded the study of the scholarship of engagement, to encourage universities to seek out ways to become reengaged with their communities.

Nine years before Boyer's article, the World Commission on Environment and Development had introduced the world to sustainable development through the Brundtland report. This report defined this concept as, "...development that meets the needs of the present without compromising the ability of future generations to meet their own needs..." (WCED, 1988, p. 41). Sustainable development tries to balance what it sees as the three elements of sustainable, the Social, the Ecological, and the economy (Ruggerio, 2021). Despite early criticism from those who found the focus on economic growth contradictory, it soon became the model for sustainability (Ruggerio, 2021), leading to efforts such as the sustainable development goals (Allen et al., 2018).

Something else that sustainable development start, was the field of USR. The terms first coined by by (Reiser (2007) in 2007, who attempted to rebalance some of what he saw wrong with universities and social engagement at the time (Esfijani et al., 2012). The idea of USR was popular, with the precursor to the GUNi framework being developed for Latin American universities (Vallaes et al., 2009), and several other versions have sprung up (Ali et al., 2021). Despite the studies on USR, like its corporate counterpart there is no clear theoretical definition of its concepts (Bokhari, 2017). The main message seems to be for universities to use their power as institutions for social betterment (Bokhari, 2017).

Returning to the GUNi framework, the basis of the framework is that through university's direct influences, it should look to increase societal wellbeing, as we've just discussed (GUNi, 2014). The framework should also be fairly flexible in outlook, noting that, "How can we expect to reduce our overall carbon footprint if we persist with an economic system that is fuelled by a focus on ever-growing sales and planned obsolescence?" (GUNi, 2014) which is an interesting viewpoint for a measure based in sustainable development. In this framework the university can exercise its social responsibility on four different axes, split on a organisational-academic basis (GUNi, 2014). There four axes are:

- **Organisational impacts** – impacts related to the day-to-day operations of the university, including the administrative staff, community, and students. How the university goes about organising these tasks can also cause environmental impacts.
- **Educational impacts** – Impacts related to the ethics, values, and ways of interpreting the world imparted to students.
- **Cognitive impacts** - Impacts related to the production of knowledge, but also the perpetuation of knowledge, through truth, science, legitimacy, and education. Universities consolidate the relationship between technoscience and society.
- **Social impacts** – impacts related to the university contributes (or not) to societal outcomes, be they local or global. A university can become overly closed to sharing this knowledge with, which was what (Boyer, 1996) observed.

Each aspect of the university's interaction with society is called an impact, due to the risk of it failing to live up to the standards of the university (GUNi, 2014). This may not be by choice, but due to unforeseen impacts from decision which had good intentions. Potential negative impacts from these interactions can include scientific irresponsibility as a negative cognitive impact, as well as poor environmental impacts for negative organisational impacts (Guni, 2014). The framework in figure 4, shows that it considered the university at the centre of the framework, with these social responsibilities acting out towards the community. This is an interesting point, as with CSR, part of the encouragement remain faithful to CSR commitments is the potential risk of reputational damage (Kim & Woo, 2019). In this hypothetical the model could also work in reverse.

Since, the main difference between sustainable development and degrowth is the economic factor (Hickel & Kallis, 2020), and the framework itself has said that it is not the acts, but the systemic cause which creates the impacts (GUNi,

2014), we can apply the degrowth framework to this, altering what the system respects as impacts. As discovered through the interviews these four axes are emergent and so have been validated for this framework also. However, there is one thing to change about the model, in the GUNi framework the university is in the centre and its social impacts are spreading out. As stated however, the university can also be influenced. Therefore if a social impacts is applied to university, then how that university treats those impacts will be known.

#### 4.2.3. The Framework for Social Responsibility in Universities

As described in the previous section, the framework for social responsibility in universities, looks like a reverse of the Guni model, figure 5.

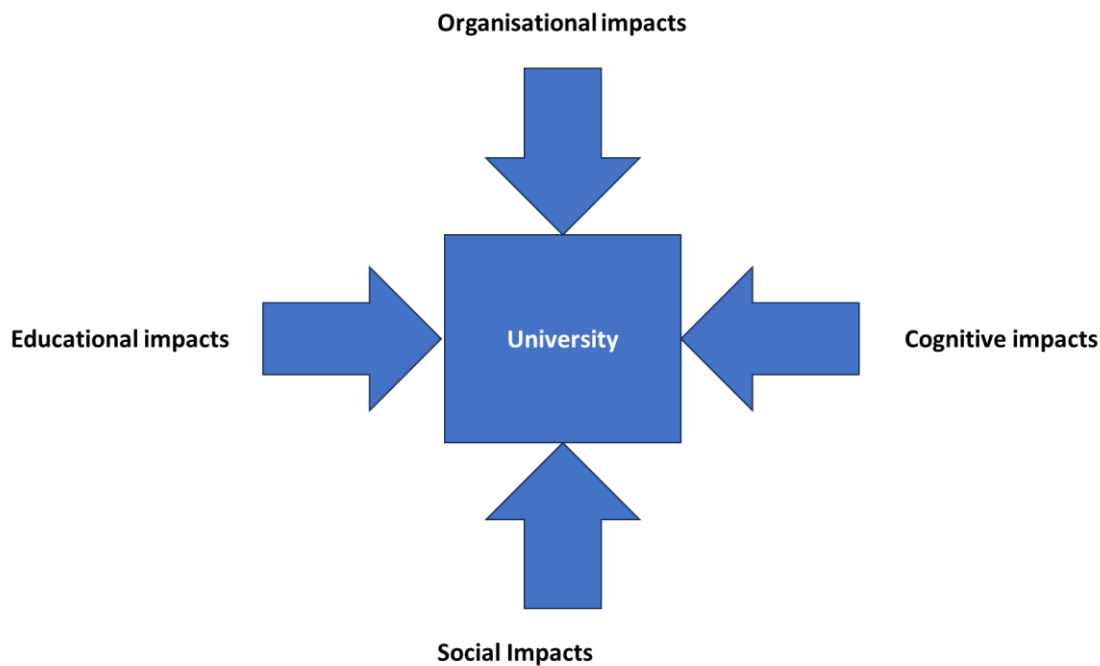


Figure 5 Framework for Social Responsibility in universities

With the impacts moving towards the university, any societal forces are now acting on the university structure. The impacts themselves maintain much of the same function as the GUNi (2014), with the notion that societal needs are now expressed on the university itself. The impacts are:

- **Organisational impacts** – impacts related to the day-to-day operations of the university, including the administrative staff, community, and students. How the university goes about organising these tasks can also cause environmental impacts.
- **Educational impacts** – Impacts related to the ethics, values, and ways of interpreting the world imparted to students.
- **Cognitive impacts** - Impacts related to the production of knowledge, but also the perpetuation of knowledge, through truth, science, legitimacy, and education. Universities consolidate the relationship between technoscience and society.
- **Social impacts** – impacts related to the university contributes (or not) to societal outcomes, be they local or global. A university can become overly closed to sharing this knowledge with, which was what (Boyer, 1996) observed.

As this study has identified, one of the most pressing societal problems that we currently face is that of climate change (IPCC, 2023), and due to the limited time that available to avert 1.5°C of warming, radical societal change is required. In such a scenario, applying only technologically feasible options to avert this looming threat seems equates in a degrowth framework to be ensuring social responsibility. By applying these concepts to the university, it allows the

way that university's interact with these social responsibilities to become apparent. Using a broad theme such as degrowth would allow all the universities functions to be investigated as to its relations with degrowth concepts. However, the frame also allows for sub-systems of degrowth, like urban mobility to be investigated. The main barriers to this research is accessing data, in whatever form that allows a broad enough look into the university's structure to gauge the full range of impacts.

Inputs to the socially responsible university model can be tested qualitatively through interviews. This can take the form of interviews with those who have interactions with the university on the topics discussed, such as academics operating in a chosen field. Additionally, the model is flexible enough to also be used with quantitative methods, with the correct questions, and access to the right data, for example research output, financial statements, social media posts, allowing a quantifiable measure of how the university is engaging with these societal issues.

To test this model, the aspect of degrowth that will be analysed will be degrowth urban mobility, using the themes as developed in SQ1, to test these impacts on the university structure, figure 6.

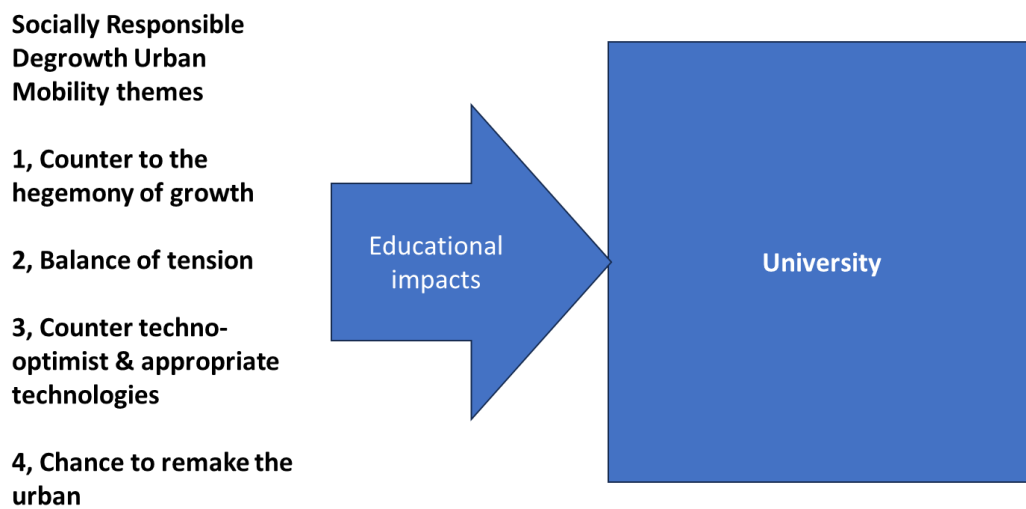


Figure 6 Application of Degrowth Urban mobility themes to the framework

### 4.3. How are Universities Currently Interacting with Degrowth Urban Mobility

To gain insight into how universities interact with themes of degrowth urban mobility, developed in section 4.1., they will be analysed through the framework as developed in section 4.2. and shown in figure 5. The results of this analysis will be aligned with the different impacts of the university, with each containing a reference to the themes developed in section 4.1. The data used to gain these insights will come from the interviews with scholars which helped to conceptualise the framework, since the interview subject matched the framework. The results of the analysis show that while certain aspects of the university are promoting positive impacts in line with their commitments as socially responsible institutions, many of the aspects are not.

Within cognitive impacts, the overall picture is mixed, while research on urban mobilities is seen as being positive when coming from a geographic ontological position, the same cannot be said for those from an Engineering ontological position. Despite both subjects focusing on some similar aspects of urban mobility, both subjects have largely shunned inter-departmental relationships, to the point that the two studies languages for the same concepts are different, meaning the chance for a more holistic approach is currently lacking. The negative impacts on research in degrowth urban mobilities is also further degraded by the encroachment of growth-based systems within universities, such as the need to compete for students and funding, which has been seen to have a detrimental effect on research topics.

Educational impacts see a similar picture, as the different ontologies of how engineering and geographic disciplines are taught are on full display. While Geography tends to teach holistic curriculums in line with positive outcomes, Engineering being more focused on 'doing' fails to exhibit critical thinking of the main assumptions, providing negative results. More broadly, across the whole university curriculum, the lack of requirements for sustainability to be embedded in all courses is seen as another negative factor, as giving every student the tools to recognise the current hegemony of growth is needed to enact the vision of degrowth urban mobilities.

Universities are also failing in their responsibilities towards wider society, by failing to engage with the wider debate on degrowth urban mobilities, allowing other less reputable sources to take its place. This includes the failure to disseminate published information to a wider audience, giving the university the appearance of being an elitist institution and risking reputational damage for when it does speak out.

Finally within the organisational impacts, universities are not creating the structures necessary to enable them to act socially responsible for degrowth urban mobilities. By adhering to growth based policies, such as practices designed to find funding for further research, as well as to increase standing in university league tables, these limit how far universities can go in supporting degrowth urban mobilities practices. The infrastructures developed by most universities also fail to live up to degrowth principles, and therefore fall short of enabling

Overall, while there are some aspects of universities which have been identified as having a positive social impact for degrowth urban mobility, the majority of the impacts undermine these, with social and organisational impact areas being particular poor for degrowth urban mobility outcomes. Much work will need to be done by universities to improve this position so that they can be seen as being socially responsible in the area of degrowth urban mobilities.

#### 4.3.1. Cognitive Impacts

The interviews identified that university's research agenda had been compromised by the growth hegemony, due to twin factors of reputation, and financing of universities. The reputational aspect come from the increasing use of ranking systems for universities, which encourage universities to promote certain types of research. One of the main systems used to do this is the H-index, which is used to indicate the value of the research done by a researcher and an institution by the number of papers published and citations generated, as one interviewee explained:

*"So, what we need to do is to produce as many papers as possible and then in, evaluations or when positions are filled...it's the number of publications and the number of citations."* – Interviewee 16

This focus on H-index has caused some to question the depth of some of the research that is currently occurring at universities, as a need for more papers and more citations could lead researchers to conduct less rigorous studies in areas which generate the most citations. As one interviewee remarked:

*"I would say it's [urban mobility research] the low hanging fruits. And in just how to say that the minimum possible."* – Interviewee 18

The second way identified in which university research for degrowth urban mobilities is threatened is due to the way that research is currently funded. With government funding for research limited, many institutions turn to external sources of finance to be able to fund their research programmes, as explained:

*"we're university of [Redacted]. the University gets its grants based on industry research."* – Interviewee 8

For some interviewees, this leaves them with the feeling that rather than concentrating on the research they wish to do, they are having to chase what funding is available:

*“You know from a researcher’s point of view, you chase what funding is available.”* – Interviewee 9

This issue can lead to a conflict of interest within the universities themselves, as universities are less likely to pursue research topics which have negative outcomes for those funding it, as one interviewee bluntly put it:

*“There is a conflict of interest within the institution.”* – Interviewee 8

This could potentially also affect the wider research programmes of the university, as the university itself does not want to be seen to conducting research against its financiers, leading to research more focused on growth outcomes in urban mobility.

Combined these two issues make it difficult for universities to fulfil their social responsibilities for degrowth as a counter to the growth hegemony. Additionally, tensions were reported by the interviewees between two of the main contributing faculties to degrowth urban mobilities, engineering and geography, as evidence by the lack of a similar language:

*“Papers from geography, they use different words for the same things as the engineers. So even for them the language is not the same, and they they also don't work together.”* - Interviewee 18

The source of these tensions seems to come from the ontological backgrounds of the two subjects, with those interviewed being of the opinion that those with a geography background have a more holistic approach to urban mobility, which enables a better understanding of degrowth urban mobilities, as described:

*“I think we are like we are well prepared in geographer in geography because the whole starting point of our field is that things are connected. It’s like this interdisciplinarity that things are connecting. This type of narrow thinking where for example travel time is the only cost that we should measure, that that doesn't fit well into a geographer’s mind.”* – Interviewee 16

This holistic approach allows geographers to interact with the main themes of degrowth more closely, enabling research to discuss the issues facing humanity, and the balance between environmental and social. For engineers, the interviewee’s felt that there was a more ‘doing’ ethic towards the discipline, with researchers often looking at guidelines and technologies which favoured growth-derived indicators rather than investigating new metrics.

This can also be seen in universities aligned with financial interests in the construction sector, who will sometimes commission the university to do research on whether new infrastructure is required, knowing that by using certain metrics often used in these decisions, the outcome will be positive:

*“The problem is that all these metrics that you have implemented in the past and are used in practice. That we don't build infrastructure because the metric tells us its true, we just use the metric to justify the, spending on the infrastructure because this the money is there for it and this is mostly true for highways.” – Interviewee 6*

While it should be noted that this description does not cover all engineering research, including that of the engineers interviewed, the majority of the responses pointed to this as an overall failing of the discipline. This means that while Geography based research seems to be conducive to exporting degrowth urban mobilities in terms of the themes identified overall, the current way that the university is funded coupled with the problems faced by the engineering department towards degrowth urban mobilities means that they fall short of a passing grade.

#### 4.3.2. Educational Impacts

Similar to what was seen from the cognitive impacts of the university, the different ontologies behind the geography and engineering disciplines is also a point of consternation for degrowth urban mobilities in their educational impacts. As with research outcomes, Interviewees felt that studies from the geography department do a better job of encompassing degrowth values by taking a more holistic approach to urban mobility, discussing both the environmental aspects as well as the social aspects of urban mobility:

*“The questions of degrowth, like all the underlying principles of degrowth, if we think of the ecological ceiling, if we think of social equity, those are very central to (...) human geography, human to regional geography. And then climate questions are more studied in physical geography.” – Interviewee 16*

This gives geography students the tools to be able to question the hegemony of growth. Geography also challenges students to see the balance between the social and environment and in many ways give students the chance to imagine a post-growth world.

For degrowth urban mobility, courses such as those offered from geography departments, are seen as good examples of how to embed degrowth principles within the course. In contrast to this, courses offered by the engineering department were seen as almost one-dimensional, with much of the focus being on guidelines for the construction of infrastructure, rather than a more holistic view of the social and environmental impacts that these might have, with one interviewee discussing guidelines for building car parking:

*“The transportation engineers, they still have the same guidelines, for we need to. We need to make all the parking lots in.” – Interviewee 18*

The basis for this might also equate to a difference in the social outlooks of the two departments, as many of those interviewed felt that engineering courses were about preparing students for working within industry, and so the courses were geared towards being able to function within companies. This makes students of engineering ill prepared to ask questions about the basic premise of indicators, as one interviewee observed:

*“I mean, engineering has been part of the military agenda overall. So kind of the best engineers are the ones. Who just do what they're told. Like you don't want the engineers to be critical and asking like, why are we making this gun?” – Interviewee 11*

This can also be seen in the approach some of the engineering students had to elective courses, as one interviewee recalls:

*“We were offering an additional course (...) about ethics, and also like the history of science, and discussing very critically about the engineering and at the end of the course the students were asked what they thought of it. (...) I think 2 of them had the same idea, and they? They said, it was very interesting, but it won't be very useful for me, because I'm an engineer and I will need to find the job.”* – Interviewee 18

This mindset means that engineering education is currently not prepared to fully engage with the themes of degrowth urban mobilities, such as being more critical of techno-optimism, however it is not alone in this. While the main faculties involved in education for degrowth urban mobility are the engineering and geography faculties, universities also have a responsibility to enable the conditions for these students to create the future of the urban environment. This means that degrowth principles should be embedded in all departments and faculties, so that every student has at least a basic understanding of the issues currently facing humanity and some of the proposed solutions. This would be following governmental organisations recommendations on how best to interact with the issue. One of the interviewee's compared this to a report to embed sustainability within government:

*“[The] sustainability goal has got to influence every single department. I mean, I think you know the [Redacted] government Master plan that it came up with on sustainability and the need of it to go into every single government department.”* – Interviewee 9

So, while universities can be seen to be meeting most of the degrowth urban mobility themes within geography education, they are not meeting those obligations when it comes to the wider curriculum and engineering.

#### 4.3.3. Social impacts

The interviews identified that universities are neglecting their social impacts towards fostering degrowth urban mobilities in its communities in several ways. Interviewee's felt that universities were neglecting to share their knowledge from research with wider society:

*“I think what they now call Third mission. The communication of research to the wider the public has been not very important.”* - Interviewee 18

This hoarding of knowledge runs contrary to the beliefs of a socially responsible university. Additionally, most of the research generated by universities are kept behind journal paywalls away from the general public, as one interviewee found with their own work:

*“What I notice in my own work and many others work which could be still done better is that when we published paper then they are in some platform.”* – Interviewee 16



This lack of output from universities to the general public, can lead to universities being thought of as elitist, and less likely to create a sense of solidarity with the wider public, leaving other sources to fill the information gap, with potential misinformation, as one interviewee overheard:

*“The elites will prevent us from the opportunity to go outside of our neighbourhood, that we will be closed in our neighbourhoods, imprisoned in our neighbourhoods, and that we will have to pay to get out. And that, of course, no one will be able to pay this high charge to get out of their neighbourhood. So these arguments are distorted.” – Interviewee 4*

By not communicating research outputs universities are letting others who have less social responsibilities create conspiracy theories. Universities, as responsible institutions have an obligation to call out inaccuracies in the public discourse. One interviewee added that scientists should have a voice in the debate, to call out those who misuse their research:

*“Scientists also have the responsibility to push that information to society, in my opinion, because they are the ones who know [their research] best and they are the ones who can support a societal debate and political debate with fact-based information and not just with feeling based information.” – Interviewee 16*

By missing out on engaging with the public debate, it can entrench the view of techno-optimists that the world can be saved through new technologies, and that the public does not have to do anything to solve these issues, as the quote about Elon Musk shows:

*“I mean you still have this kind of very strong belief that the technology will save us that Elon Musk and or some other white male will come up with some energy source or perpetual mobility or I mean basically what we will come up with a way that emissions will disappear.” – Interviewee 14*

So by failing to engage in the wider social debate, universities are also failing to give a hopeful version of the future that might be, allowing people to imagine what a city which adheres to degrowth urban mobility principles might look like, and what that might mean for their lifestyles. Even small pilot studies, can be victims to this pushback:

*“I think I've seen examples in the [Redacted], around [Redacted] that they were trying to like that they were trying to employ some sort of like car free aspects and then there was like quite a big pushback against this that a lot of people thought like, OK, you're forcing us to give up this car” – Interviewee 2*

This failure to provide hopeful futures can help push people away from wanting to engage with degrowth and sustainability principles, into the arms of the growth focused ideas, making chances of enabling societal changes for degrowth much more difficult.

#### 4.3.4. Organisational impacts

The interviewees identified that universities operate in a global system developed for growth and have not escaped being influenced by it. The constant need to compete against other universities for students, finance, and staff have meant that the leaders of the institutions are distracted by other concerns as identified by one interviewee:

*“Well, I think the universities I also empathize a little bit with our rector and other high rank officials, I guess they also squeezed by a very strange situation in which they have to compete for funding against other universities, compete for students, have good relations with the politicians.”* – Interviewee 14

This can be seen in educational and cognitive impact areas where the H-index and finance has come to play a large role in the direction of these sectors due to the growth pressures on education, as one interviewee remarks:

*“There is this dangerous dynamic which I think is happening (...) that there is this push for being a competitive market oriented institution and I'm not sure that this is the place where you can ask critical questions about how societies organized. I mean if you are trying to benefit from how it's organized at the moment, are you really an actor of change?”* – Interviewee 14

In this university management struggle between their societal responsibility to create and disseminate information for the betterment of humanity, and the need to keep the institution solvent. This can be exemplified through the difference between the Engineering and Geography departments, where the engineering department seems to be designed for external companies.

*“I'm pretty sure because they [Engineering department] get a lot more money for the University, from the technology companies.”* – Interviewee 8

While the geography department seems to be designed to explore the current environmental and social concerns, with a very different approach to the engineering course:

*“The spatial planners and geographers, they've got quite different curriculum than engineers at polytechnics.”* – Interviewee 7

While this may seem like a balance, it is only the case for universities which have both departments, as many institutions tend to focus on one of the two, as several interviewees identified with polytechnics:

*“the Polytechnic university as you know, is historically organized in an area of engineering and area of architecture.”* – Interviewee 15

This focus can be seen in some polytechnic universities who marketing themselves as places of innovation, which are tied to the ideals of techno-optimism. While doing this, they fail to take the opportunity to actually use technology to reduce their impacts, because of cost concerns, as one interviewee recalls

*“They never did a plan to put solar panels [on their roof] until this winter, when the electricity prices skyrocket. So the motivation [is there now] to have a very ambitious program to put a lot of PV panels there. But the motivation for that is not the anticipation, crisis management sustainability. No, it's just money.” – Interviewee 5*

This failure to embrace the needed changes of the future, also impacts the universities ability to showcase itself as what the future of the urban space may look like. Many universities are still heavily dependent on private vehicular transport, building large parking garages to allow for this, and not creating the types of urban environments which would allow the campus to serve as a vision of the future for others to use.

*“Every time they build a new building they do an enormous private car parking lot, and they are just attracting more cars with their policy.” – Interviewee 5*

The failure to supply the organisational structure necessary for degrowth urban mobility's to flourish, shows that from a DUSR perspective, the university management is not meeting its social responsibilities and in doing so, affects the changes that the other impacts will be able to achieve this.

## 5. Discussion

### 5.1. Theoretical Implications

#### 5.1.1. For Degrowth Urban Mobility

By developing a theory of the themes of degrowth urban mobility this research hopes to help guide future research into the study of degrowth urban mobility. From the literature review, it was found that there is currently a lack of literature focused on degrowth urban mobility options, with only three papers dedicated in scope to both degrowth and urban mobility. Within these identified papers, standalone descriptions of degrowth urban mobility were also rare, with most of the literature examples using descriptions of degrowth, but not urban mobility in their analysis. By developing the ideas of degrowth urban mobility into separate themes, it is hoped that this will help enable future scholars to define exactly what degrowth urban mobility is, rather than relying on the language of degrowth alone. In addition, it is hoped that by contributing a novel standpoint to the literature of degrowth urban mobility, it will help stimulate further research in this field, to add to the literature present. Future research using these themes could help scholars to identify literature on urban mobility that predates 2008, to help built the literature list of this nascent field.

#### 5.1.2. The Framework for Degrowth Social Responsibility in Universities

In developing a framework for gaining insight into the degrowth social responsibilities, it is hoped that this research will begin a concerted effort to integrate a degrowth standpoint into the debates around universities. From current literature, while sustainable development perspectives on USR are plentiful, including overviews of the subject by (Ali et al., 2021), and previously by Esfijani et al. (2012), there remains no framework of degrowth within universities and education, even though as stated by (Kassel et al., 2017; Dzimińska et al., 2020), that education is one of the most important places to develop a sustainability mindset, and create the opportunities needed to tackle societal change. This is made all the more surprising due to the views of one of the most influential degrowth authors in Kate Raworth,

who in her book discusses her issues at getting economist to treat her theories on degrowth as credible (Raworth, 2017). It is also a missed opportunity, as while there is valid criticism of CSR techniques from both sustainable development and degrowth scholars (Forcadell & Aracil, 2019; Khmara & Kronenberg, 2018), there is evidence that by developing CSR strategies, companies are beginning to change to become more sustainable members of society (Forcadell & Aracil, 2019; Khmara & Kronenberg, 2018). While this change is not enough for degrowth scholars, it can bring about social pressures for organisations and institutions to change (Kim & Woo, 2019). By staying out of the debate, degrowth risks losing the battle before it starts, a generation of young people are more knowledgeable and passionate about sustainability issues than ever before (Djafarova & Fouts, 2022), and before these minds changed by the education system, degrowth should try to change the system.

### 5.1.3. For Universities and Degrowth

The performance of universities in their social responsibility towards degrowth urban mobility will not come as a shock to many. As has already been explored, Kate Raworth (2017) found a similar level of resistance within the economics departments as some of interviewees here did from the engineering. What was surprising was the extent to which engineering studies failed degrowth urban mobility, in contrast to geography. While as stated in the research, this does not apply to all engineers, as table 2 shows, several of those interviewed were trained engineers working in urban mobility and degrowth. The results suggest a difference in ontology, this is backed up by ontological discussions on both sides, with Staples (2014) noting that engineering has a different ontology to every other subject said to be scientific, which includes geography Li (2021). While interviewees noted that the discipline is changing, the slow pace of this, may need to be sped up if degrowth is to play a role in engineering in the future. Finally, from the university side, the failure to meet most of the degrowth social responsibility criteria towards degrowth urban mobility, may not come as a surprise but should come as a warning. Universities are having to operate in increasingly growth focused markets, with shrinking budgets, an easy way out it to focus on external revenue streams. However, these risks weakening the university in the long run, much like CSR in companies, universities are not immune to reputational damage. As stated in the research, universities have a special responsibility for social outcomes, as knowledge generators, perpetuators, and disseminators (Dzimińska et al., 2020), and therefore have an obligation to meet the standards set by this research.

## 5.2. Theoretical Limitations

During the researching of this thesis, several limitations have become clear with the methodology, and through the learnings, this section will discuss some of the largest issues.

### 5.2.1. Literature Sampling

There are several potential limitations with the sampling used during this study. For the literature search for SQ1 the method used was a semi-systematic analysis. The semi-systematic method is preferred when the researcher wishes the literature review to be somewhat reproduceable, but there is a significant amount of subjectivity within the analysis Snyder (2019)). This was the case during the literature search, as many of the papers found had very short sections on transportation and deciding on a cutoff point for how in depth this section needed to be felt to be overly subjective. A different approach could have used a simple narrative analysis using keywords to identify the correct papers and choosing the most important papers. While this would not have been reproducible, it would have allowed for the collection of papers which discussed mobility within its theory on the urban environment implicitly to be captured and could perhaps have led to a wider range of themes emerging from the data.

### 5.2.2. Keyword Selection

A limitation noted during the write up of the paper, was the identification of the keywords of the study. These were sorted into two categories, a societal and a mobility keyword, however degrowth urban mobility is not just the combination of those two terms, it also comprises a spatial element. While it is unlikely that this oversight has had too large an impact on the results since mobility systems need to interact with one another, however, this could have perhaps helped with the semi-systematic literature search which struggled to find papers, and in the process made the study more robust.

### 5.2.3. Interviewee Diversity

The third limitation with the form of sampling used came from the diversity of interviews. Of the interviewees, 16 of the 18 were men, with 16 out of 18 coming from European institutions, with neither of the other interviewees coming from a developing country background. This gives the subject a very western, educated, industrialised, rich, and democratic feel to the study. This is despite 30% of those contacted for interviews being women, as only 10% of those replied, and were able to commit to an interview during the interview window. So while the results are applicable, a wider study which attempts to gauge views on degrowth from across the social spectrum should be followed.

### 5.2.4. One Interview cohort

For those that were interviewed, while the familiarity with the degrowth subject matter helped with broadening the themes of degrowth urban mobility, the decision to combine both interviews into one alongside the fact that the interviewees all worked in academia may have skewed the direction of SQ2. While building the familiarity may have helped the results, due to some of the interviewees coming from exclusively urban mobility or degrowth backgrounds, the use of definitions to help these interviewees to understand the degrowth or urban mobility aspects may have guided the interviewees towards certain answers. While it was noted that the themes from the interviews on academia were stronger, this could also have been an effect of the interviewees digesting the information and applying this to their own fields. In future research it should be ensured that interviewees know the subject area up front, to avoid the biasing of the interview results.

The wording of the second sub-research question looked to find how the barriers to the themes describing degrowth from the wider community, as shown by the first interview script. With all the interviewees belonging to academic institutions, it seems natural that they would describe the environment with which they are most familiar with. While this did not affect the final research result, as it meant that the scholars could be seen as having been interviewed from a 'naturalistic state', it potentially meant that the sampling process for the second research question was too narrow, and to properly investigate the question on a broader basis, a wider sample of interviews of different backgrounds should have been selected.

### 5.2.5. Framework limitations

While the framework has produced several interesting results of how universities interact with the themes of degrowth urban mobility, the data gathered missed some of the quality indicators that would be expected from such a study. This is in part due to how the entire research was set up with one cohort of interviewees from a single background. Since the responses of those interviewees set the foundation for the framework, the framework itself could be considered only applicable from an academic standpoint. This is balanced however by the fact that several other studies have also concluded that this is a suitable framework to investigate universities social responsibilities (GUNI, 2014; Stephens et al., 2008). Additionally, to accurately gauge the impacts of degrowth urban mobility on

universities, a wider interviewee base including interviewing those in social outreach programmes and the management organisation should be used. Finally for this interview cohort, due to the retrospective application of the framework to the interviews, the data produced is in all likelihood incomplete. Now knowing the extent of the framework, as well as a wider interviewee base, a better interview script could be formulated to properly investigate these interactions.

## 6. Conclusions

This research has given insight into how universities are interacting with themes of degrowth urban mobility through creation of a degrowth social responsibility framework. This was accomplished in three stages, by first identifying the main themes of degrowth urban mobility, second by the construction of a framework designed to investigate if a university is acting in a socially responsible way towards these themes, and finally through an investigation of these themes through the framework.

In the first stage, a study of relevant literature as well as interviews with scholars allowed the main themes of degrowth urban mobility to be expressed. These consider that degrowth urban mobility is, 1. A counter to the hegemony of growth mobility, it is able to counter hegemony by being, 2. Part of a complex system, as such degrowth urban mobility is a balance between the tensions of environmental and social outcomes, striving for equilibrium around the sustainable corridor. 3. Degrowth urban mobility is a warning that techno-optimism, which promises technology will solve our problems, will not achieve those promises and likely come too late to make a difference. Despite being a warning against techno-optimism, degrowth urban mobility is not anti-technology, but instead prioritises appropriate technologies to satisfy human social needs within the sustainable corridor. Finally, 2. Degrowth urban mobility is a chance to change imaginaries surrounding the future of the urban plan, and urban living, by encouraging visions of a future without growth.

The second stage of the study used emergent insights from interviewees to construct a framework to give insight into how universities are interacting with these themes of degrowth urban mobility from a degrowth social responsibility standpoint. This took emergent insights from interviews with degrowth and urban mobility scholars, that universities interact with degrowth urban mobilities through their, 1. Cognitive impacts, 2. Educational impacts, 3. Social impacts, and 4. Organisational impacts and paired this with a framework developed to measure the social responsibility of universities. By using the degrowth definition of social responsibility, this allowed the framework to be used to give insights into how the university is interacting with degrowth urban mobility.

Finally, the themes developed for degrowth urban mobility, were analysed using the framework, and the testimonies of scholars currently operating in universities on degrowth and urban mobility studies, to give insights into how the university is interacting with degrowth urban mobility. Using the framework, it was found that universities are failing to meet their degrowth social responsibilities towards degrowth urban mobilities with their social and organisational impacts, due to a lack of engagement with their communities, and adherence to growth based hegemony. The picture was mixed for universities cognitive and educational impacts, with geographic based studies of degrowth urban mobilities meeting their degrowth social responsibility targets. However, the university failed to meet those targets when engineering based studies were examined, and also suffered in cognitive output due to conflicts of interest arising from growth-based policies.

In conclusion, this study has identified key themes within degrowth urban mobility which will help differentiate it from similar concepts and promote new research avenues. Using the insights gained from the interviews, a framework which allows the social responsibility of universities to be analysed has been created and grounded in the literature. This framework has then been used to find out how universities are interacting with the themes of degrowth urban mobility, showing that universities have much to do to have positive societal impacts in line with degrowth urban mobility themes. This research is also a call for more research on how to influence universities for degrowth outcomes, of which the framework produced here can be a starting point.

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# Appendix A – Interview guides

## Appendix A.1 Interview Guide 1

### Interview guide 1

#### Starting script –

Thank you for agreeing to this interview on post-growth urban mobilities. Before we begin, I have already sent you a consent form for the use of data for this meeting, which I would appreciate you signing and returning so I can use this data. Before we go any further I want to confirm that you consent to this interview being recorded so that it can be transcribed later.

**Note: If yes, start recording devices, if no, ask if it is OK to proceed further just using written notes.**

Thank you. Secondly, as per requirement, I will remind you that you are able to walk away from this interview at any time, for any reason during with no penalties. All information will be kept by myself and handled in accordance with GDPR act, with audio and video recordings of the interviews deleted once the data collection is finalised and all interviews have been transcribed. At this time, the final report is set to contain data related to your position, but will anonymise gender, the institution you belong to, and your name. Any change to this will need your approval after this recording, do you agree to this?

**Note: If yes, continue with interview, if no, give option to suspend meeting or agree to continue without the information being used for the research.**

Thank you again. Before we begin in earnest, there are a few pieces of information that I need to collect:

1. Confirm your name?
2. Can you state your current position?
  - a. Can you state who this is for?
3. Number of years of experience?

Thank you, and finally before we begin I would like this interview to be open, so please feel free to ask me questions as well if you need anything clarified during the interview or if you'd like more information, I'll try to answer fully whilst also aiming to get to all my questions, but I would prefer this to be an exchange rather than purely an extractive process. With that said, I want to tell you a little about myself before we begin, after which if you have any questions about this process or the topic please feel free to ask them?

*(brief rundown of background and the inspiration for the research)*

1. OK any questions?
  
2. What is your definition of Urban mobility?
  - a. *Note: have a definition of urban mobility available.*
  - b. Would you agree that this can be defined spatially (distance) or with timing?
  - c. Is urban mobility limited to the mobilities within regions or do you also see it encompassing a wider agenda such as policy, planning or society?

*Urban mobility: (from [tomorrow city](#)) dynamics of the movement of goods and people in cities (i.e. the ability to move vs urban transportation which is the thing you do - [forum for the future](#))*

3. What kind of Urban mobilities interest you?
  - a. What are some examples of these?
  - b. Why is it that these examples interest you?

4. Do you see a rising interest from planners, scholars and other stakeholders towards more sustainable urban mobilities? (*Active travel, EVs*) and
  - a. Which elements of sustainability are these stakeholders discussing? (Emissions, energy, social implications, ecological impacts)
  
5. Have you seen opportunities or barriers in this area in discussions with stakeholders? *Note: there is some research on analyses like CBA hindering projects*
  - a. Planners / decision makers?
  - b. Public?
  - c. In your studies (*for Travis it is Geographic information science & civil and environmental engineering – but he also did sociology and anthropology*)
  
6. Do you think that the way urban mobility is set up now, it can facilitate change to a sustainable future?
  - a. Do you think this includes the social lens?
  - b. Zero emissions vs zero impact.
  
7. What do you know of the concept of degrowth?
  - a. *Have a definition of degrowth available*
  - b. *If they have heard of it: Where was this idea introduced?*

*Degrowth: An equitable downscaling of production and consumption that increases human well-being and enhances ecological conditions” (Schneider et al., 2010, 512).*

- *Reduced metabolism – where energy and material use is greatly reduced in society, (often coupled with more things produced locally)*
  - *Justice is a main theme, looking at equality in equity, gender, power, globally.*
  - *Ecologically sound – within ecological limits, such as those proposed by Rockstrom or Raworth*
  - *To do this will require new ‘indicators’ for success (away from GDP)*
8. Using some of the definitions of degrowth, I want to understand where and how you see them applying to urban mobility? Firstly, how do you see efforts to reduce the metabolism of urban mobility?
    - a. Metabolism also includes the use of materials to build infrastructure and modes of mobility, how does this have an influence on urban mobility?
    - b. The idea of the localism is that things that are needed are made or available locally, how do you see this affecting urban mobility?
  
  9. How do you see the concept of Justice being applied to urban mobility, that being for equality between genders, equity, access, etc.? *note: may need to explain a little on the justice for gender being different stops, and safety.*
    - a. Do you think that this can be realised under our current institutions?
  
  10. How do you see the concept of ecological boundaries on urban mobility?
    - a. This may include an upper boundary to the amount of ‘damaging’ travel that an individual makes, what is your opinion of this?

11. Finally for the concepts, do you feel there are alternative ways that we can frame 'success' for urban mobilities outside of decreasing travel times and CBA's?
  - a. What kind of success measures do you see for this?
  
12. Having discussed how degrowth could affect urban mobility, where do you see the opportunities for such a system lie?
  
13. Are there any current examples of urban mobility that you think fit with what we have described so far?
  - a. *Walking and bicycles can be used*
  
14. Where do you see the challenges ahead for implementing these types of mobility?
  - a. Potentially too rushed – a la scooter mobility in Paris
  - b. Social challenges – populism from conservative NIMBYs
  
15. With everything that's been discussed is there anything else you would like to add, or know about my research so far?
  
16. Final question is a fun one – Given what we have discussed, what would your ideal journey under these conditions?

**Finishing script** – Once again I have to thank you for your participation in this research, and to remind you that you have the right to request that this interview is not used from the research and deleted at any time. And if you would like any further information on what we have discussed today then I can provide some articles on the subject. I would also like to ask for permission to contact you again if anything further comes up during my research that I would like to clarify with you?

## Appendix A.2 – Interview Guide 2

### Interview guide 2

#### Starting script –

Hello, and thank you for agreeing to this interview on post-growth urban mobilities. Before we begin, I have already sent you a consent form for the use of data for this meeting, which I would appreciate you signing and returning so I can use this data. As per that document, if at any time you want to stop this meeting, or have this data deleted just stop the meeting and request this and it will be done in accordance with GDPR. Before we go any further I want to confirm that you consent to this interview being recorded so that it can be transcribed later.

**Note: If yes, start recording devices, if no, ask if it is OK to proceed further just using written notes.**

Thank you again.

1. Before we begin in earnest, and for the transcript can you share a bit about your background?
  - a. Confirm your name?
  - b. Can you state your current position?

- i. Can you state who this is for?
- c. Number of years in this position?
- d. **How did you become interested in [Insert field of study]**

*State that this is an open meeting, can ask questions where necessary, and I'll give a little of my background (brief early stuff – concentrate more on why post-growth urban mobilities) perhaps a little focus on the teaching side.*

2. What is your definition of Urban mobility?
  - a. *Note: have a definition of urban mobility available.*
  - b. Would you agree that this can be defined spatially (distance) or with timing?
  - c. Is urban mobility limited to the mobilities within regions or do you also see it encompassing a wider agenda such as policy, planning or society?

*Urban mobility: (from [tomorrow city](#)) dynamics of the movement of goods and people in cities (i.e. the ability to move vs urban transportation which is the thing you do - [forum for the future](#))*

3. In your research you've investigated many different types of mobilities within cities, what do you think is most important ensuring sustainable mobility?
  - a. Need for low carbon sources
  - b. Need for active travel
  - c. Infrastructure?
  
4. During your time in your research, have you come across the term degrowth, what do you know of the degrowth movement?
  - a. Some of the papers are quite close to degrowth
    - i. **[Insert list of local options]**
  - b. How does it apply to society
  - c. Reduction of energy and material use.
  - d. Justice
  - e. Ecological limits

*Degrowth: An equitable downscaling of production and consumption that increases human well-being and enhances ecological conditions" (Schneider et al., 2010, 512).*

- f. *Reduced metabolism – where energy and material use is greatly reduced in society, (often coupled with more things produced locally)*
- g. *Justice is a main theme, looking at equality in equity, gender, power, globally.*
- h. *Ecologically sound – within ecological limits, such as those proposed by Rockstrom or Raworth*
- i. *New indicators of success*

5. What sorts of urban mobilities or urban forms do you see as going well with a degrowth approach to urban mobility?
  - a. Active travel
  - b. Localism
  - c. Shared infrastructure
  - d. **[Insert local options]**
  
6. For a degrowth approach where do you see opportunities for such a system?
  - a. Redefining access by making everything closer
  - b. Coming on the back of COVID?

7. And where do you see the barriers to such a system?
  - a. Gentrification
  - b. Getting it through policy areas or getting public support?
  
8. Do you think that enough is being done by scholars to put 'post growth' thinking and the doughnut economy as an alternative to the current dominant worldviews around transport?
  - a. Scholars with stakeholders
  - b. Teaching?
  
9. On teaching, I believe you are a teaching/taking [Insert course], do you discuss alternative indicators or measures of transport success in these classes?
  - a. What kinds of measures?
  - b. How much is the focus still on 'classic' measures such as CBA and the travel cost method?
  
10. How prevalent do you believe this to be within the planning and mobilities community?
  - a. Different universities?
  - b. Within [Insert University]?
  
11. How important do you believe it is that we embed these principles in our spatial planning and urban mobility students?
  - a. To ensure that future planners are open to these ideas?
  - b. Ability to look at different ideas in the future?
  - c. *Can I have a copy of the syllabus?*
  
12. Where do alumni from [Insert University] and the [Insert Department] end up?
  - a. Consultants?
  - b. Decision makers?
  
13. Do you think enough is being done to bring degrowth and other alternative philosophies into the mainstream both as a teaching idea and also an idea of how we live our lives?
  - a. Wider audience
  - b. Public
  - c. Decision making
  
14. How do we best interact with stakeholder groups as scholars, in order to begin to have the discussions around degrowth, whether this be in urban mobility or other areas?
  - a. Activism as scholars?
  - b. Working with other
  - c. Getting public support – especially from a justice view.
  
15. *Personal question* What hope do you have for the future, in terms of mobility projects, what would you like to see happen with your research?

**Finishing script** – Once again I have to thank you for your participation in this research, and to remind you that you have the right to request that this interview is not used from the research and deleted at any time. And if you would like any further information on what we have discussed today then I can provide some articles on the subject. I would also like to ask for permission to contact you again if anything further comes up during my research that I would like to clarify with you?

## Appendix A.3 – Interview Guide 3

### Interview guide 3

#### Starting script –

Hello, and thank you for agreeing to this interview on post-growth urban mobilities. Before we begin, I have already sent you a consent form for the use of data for this meeting, which I would appreciate you signing and returning so I can use this data. As per that document, if at any time you want to stop this meeting, or have this data deleted just stop the meeting and request this and it will be done in accordance with GDPR. Before we go any further I want to confirm that you consent to this interview being recorded so that it can be transcribed later.

**Note: If yes, start recording devices, if no, ask if it is OK to proceed further just using written notes.**

Thank you again.

4. Before we begin in earnest, and for the transcript can you share a bit about your background?
  - a. Confirm your name?
  - b. Can you state your current position?
    - i. Can you state who this is for?
  - c. Number of years in this position?
  - d. **What made you want to work in [insert field here]?**

*State that this is an open meeting, can ask questions where necessary, and I'll give a little of my background (brief early stuff – concentrate more on why post-growth urban mobilities) perhaps a little focus on the teaching side.*

5. What is your definition of urban mobility?
  - a. *Note: have a definition of urban mobility available.*
  - b. Would you agree that this can be defined spatially (distance) or with timing?
  - c. Is urban mobility limited to the mobilities within regions or do you also see it encompassing a wider agenda such as policy, planning or society?

*Urban mobility: (from [tomorrow city](#)) dynamics of the movement of goods and people in cities (i.e. the ability to move vs urban transportation which is the thing you do - [forum for the future](#))*

1. You have a number of papers looking at sustainability in cities and their transport modes, what do you think is the most important element for transforming mobilities into something more sustainable?
  - a. Need for low carbon sources of power
  - b. Need for active travel
  - c. **Active travel vs cars**
  - d. Teaching?
2. Ideas around mobility guarantees and reducing transport resource consumption are concepts that also comes under the umbrella of degrowth, to what extent are you aware of degrowth and what concepts it constrains?
  - a. How does it apply to society
  - b. Reduction of energy and material use.



- c. Justice
- d. Ecological limits

*Degrowth: An equitable downscaling of production and consumption that increases human well-being and enhances ecological conditions” (Schneider et al., 2010, 512).*

- a. *Reduced metabolism – where energy and material use is greatly reduced in society, (often coupled with more things produced locally)*
- b. *Justice is a main theme, looking at equality in equity, gender, power, globally.*
- c. *Ecologically sound – within ecological limits, such as those proposed by Rockstrom or Raworth*
- d. *New indicators of success*

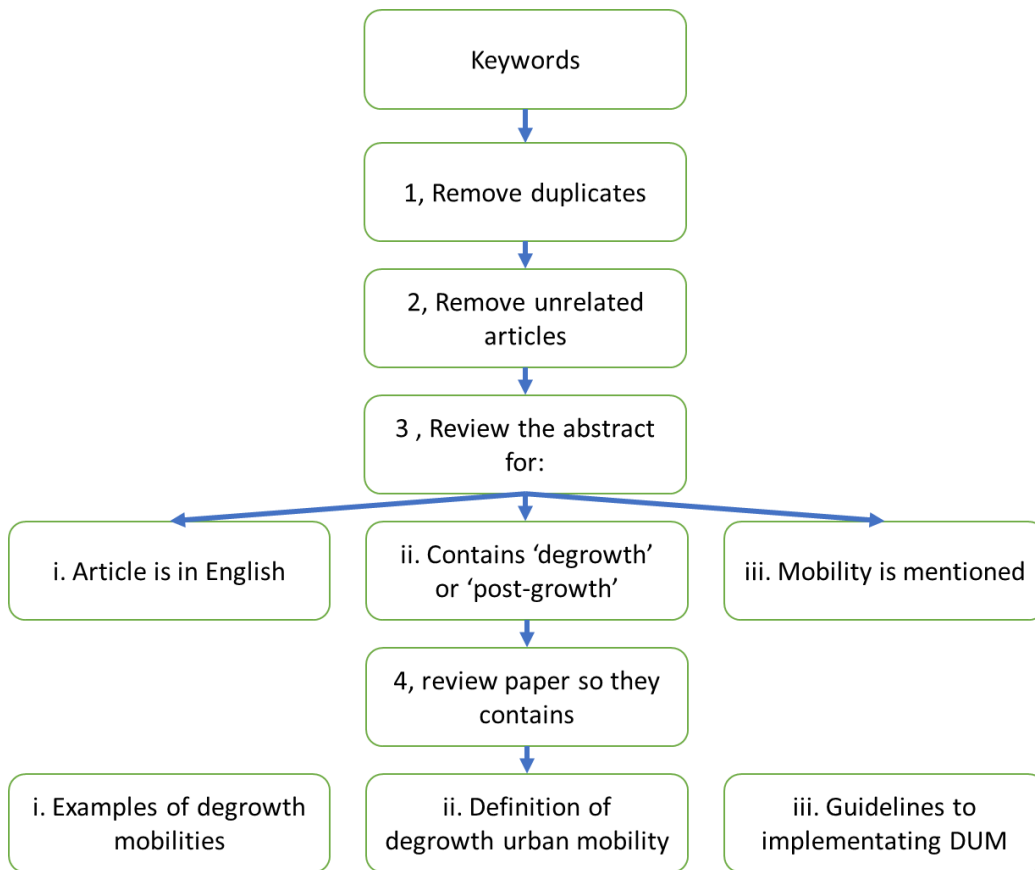
3. With this in mind, what different points of view does a degrowth view of urban mobility bring to the table? **(if interview is over 25 minutes at this point move to question 9)**
  - a. Social aspects
  - b. Justice
  - c. Accessibility?
  - d. How do you see the 15 minute city concept through the lens of gentrification?
  
4. *Do degrowth narratives of urban mobility fit into much of the current research going on in cities? (optional)*
  - a. *Is it seen as an unlikely future?*
  - b. *Tension between technological progress and sustainability?*
  - c. *Idea for use as a planning tool?*
  
5. *Where do you see barriers to a degrowth model of urban mobility? (optional)*
  - a. *Politicians*
  - b. *Current research focused on transportation?*
  - c. *General public*
  
6. *Where do you see the opportunities of this outlook? (optional)*
  - a. *Localism*
  - b. *Sustainability*
  
7. How are ideas around sustainability and degrowth taught to students of [insert course at [insert university]]?
  - a. Reducing energy and material demands
  - b. Alternative indicators – and an openness to them
  - c. Justice
  - d. Maximum’s in mobility?
  - e. **Are sustainability principles taught to all at [insert university]?**
  
8. How important do you think it is that Universities (in general) teach Sustainability and how it affects people to all departments, and do you see the same level of understanding of these sustainability systems in colleges in the Engineering/Geography department as well as your own?
  - a. How should this look in practice?
  - b. Kate Raworth anecdote about economics
  - c. Differences between nations and courses (North America vs NI, engineering vs geography)

9. How big a difference can universities have in changing the narrative in urban planning and mobilities towards a degrowth mindset?
  - a. Policy makers
  - b. Research?
  
10. Do you believe that universities could do more for sustainable urban mobilities and degrowth urban mobilities, through other avenues such as their research programmes and with how they operate?
  - a. How does this look for technical universities with much investment from infrastructure firms?
  
11. if [Insert university] was to take a degrowth approach to these (and mobilities more specifically), what would the universities commitments look like?
  - a. Planning
  - b. Example of car parking spaces**
  - c. Housing for students
  - d. More cross-department meeting spaces?
  - e. Activism
  - f. More women in the sector?
  
12. What barriers do you see to [Insert university] being able to take on such an approach?
  - a. Political?
  - b. Finance?
  - c. Etc?
  
13. There is the idea that the university can be an agent of change (an actor which can influence others on a subject), do you think they fulfil this role?
  - a. And how do you think they can best leverage this position to generate more sustainable urban mobilities?
  - b. How tied to activism should this be?
  
14. *Personal question* With all the research you've done, you must have an idea about what kind of urban future you'd like to see, would you mind sharing that with me?

**Finishing script** – Once again I have to thank you for your participation in this research, and to remind you that you have the right to request that this interview is not used from the research and deleted at any time. And if you would like any further information on what we have discussed today then I can provide some articles on the subject. I would also like to ask for permission to contact you again if anything further comes up during my research that I would like to clarify with you?

## Appendix B – semi-systematic Literature review overview

As laid out in the data collection section, this appendix lays out the semi-systematic nature of the literature in more detail than in the section 3.5. The framework used to analyse the papers was based on that by Snyder (2019) and Wong et al. (2013) and is shown here below..



The keywords as laid out in table 1 were extracted from the papers by( Cattaneo et al., 2022) and (Ferreira & von Schönfeld, 2022). This table then produced 530 search results from this search on Web-Of-Science. The next two steps were done simultaneously so only result in a figure for step 2. This involved removing duplicates from the search, removing unrelated articles, which there was a lot of due to using similar terminology to crystal chemistry. Step 3 involved reviewing the abstract to ensure that the papers is 1. In English, 2. Contains mention of degrowth or post-growth, and 3. Contains mention of mobility. After this search the number of papers was reduced to 135. A fourth step was added to be more rigorous, and investigated if the papers contained, 1. Mention of degrowth mobilities, 2. Definition of degrowth urban mobility, and 3. Guidelines to implementing degrowth urban mobilities. Apply this criterion left 6 papers.

After this the google scholar papers were evaluated. Since google scholar cannot be exported, the checks of 0-2 were combined. Since there were already duplicates from the Web-of-science search, this resulted in a lot less papers. The same steps 3 and 4 were applied, leaving 27 and 12 papers respectively.

Table 3 The results of the semi-systemic literature review

Step	Web-Of-Science	Google scholar
0	530	
1		
2	135	47
3	33	27
4	6	12

## Appendix C – Full literature list

	Title	Authors	publishing date	Article type	Summary
1	A degrowth approach to urban mobility options: just, desirable and practical options	Cattaneo, C; Kallis, G; Demaria, F; Zografos, C; Sekulova, F; D'Alisa, G; Varvarousis, A; Conde, M	2022	Research Paper	A guide with indicators and measures for degrowth urban mobilities
2	An ecofeminist analysis of degrowth: the Spanish case.	Prieto, L. P., & Domínguez-Serrano, M.	2017	Research Paper	Dissucssion of how degrowth can be used to promote more equality for women in Spain, looking at a multitude of social factors, including transport
3	A safe and just space for urban mobility: A framework for sector-based sustainable consumption corridor development.	Dillman, K. J., Czepkiewicz, M., Heinonen, J., & Davíðsdóttir, B	2021	Research Paper	Applys Kate Raworth's Doughnut Economics model to Urban Moblity.
4	Beyond the rule of growth in the transport sector: Towards “clumsy mobility solutions”?	Ferreira, A., & von Schönfeld, K. C.	2022	Book Chapter	Discussion of the problems of growth-centric urban planning measures, and the need for more inclusivity of a wider range of viewpoints in the mobility planning debate.
5	Frugal abundance in an age of limits: envisioning a degrowth economy	Alexander, S.	2017	Book Chapter	A discussion of how radical simplicity within a degrowth society may look, including the outlook for transport.
6	Is eco-village/urban village the future of a degrowth society? An urban planner's perspective	Xue, J	2014	Research Paper	Using the degrowth principle of relocalisation to investigate whether eco-villages are a desireable future for degrowth, including angles on transportation for such eco-villages
7	Individual well-being beyond mobility growth?	Bertolini, L., & Nikolaeva, A	2022	Book Chapter	A discussion on the links between human development and increased mobility, and if the pandemic has shifted views.
8	Light Green Illusions and the 'Blind Field' of Techno-optimism.	Alexander, S., Gleeson, B.	2019	Book Chapter	A Discussion of techno-optimism within transportation and the suburbs, including a critique of EV's vs the need for reduced mobilities
9	Nurturing the post-growth city: Bringing the rural back in.	Spanier, J., & Feola, G.	2022	Book Chapter	A discussion on the need to realign rural and urban in degrowth scenarios, discusses transportation.
10	The dialectics between social acceleration and the growth paradigm: Innovation and transport in neoliberal planning.	von Schönfeld, K., Ferreira, A., & Pinho, P.	2018	Conference Paper	Position paper from the authors regarding mobility, innovation, and economic growth, and how planning is dominated by pro-growth viewpoints.
11	The limits of transport decarbonization under the current growth paradigm	de Blas, I; Mediavilla, M; Capellan-Perez, I; Duce, C	2020	Research Paper	A comparison of different strategies on GHG reduction in transport within urban envrionments, including degrowth.

12	Two Contrasting Scenarios for a Zero-Emission Future in a High-Consumption Society	Xue, J; Walnum, HJ; Aall, C; Naess, P	2017	Research Paper	A comparison of ecological modernisation and degrowth approaches for socio-ecological improvements focusing on transport and housing
13	Urban degrowth economics: making cities better places for living, working, and playing	Khmara, Y; Kronenberg, J	2022	Research Paper	An operationalisation of Degrowth in an urban context through a degrowth economic lens, one of which being through transport.
14	Urban planning and degrowth: a missing dialogue	Xue, J	2022	Research Paper	Discussion paper on the need for urban planners and degrowth advocates to better communicate, including those related to transport.
15	Urban sustainable mobility and planning policies. A Spanish mid-sized city case	Serrano-López, R., Linares-Unamunzaga, A., & San Emeterio, C. M.	2019	Research Paper	Analysis of Spanish medium sized cities as examples of low mobility and density planning.
16	Vélobility is to degrowth as automobility is to growth: prefigurative cycling imaginaries.	Cox, P	2022	Research Paper	An investigation of how the bicycle can be used to promote urban change as a degrowth inspired transportation alternative.
17	What about the City? Towards an Urban Post-Growth Research Agenda.	Schmid, B	2022	Research Paper	Explores the potential role for cities for societal shifts away from growth, towards a society more closely aligned with a degrowth agenda. Including the changes needed in transportation.

## Appendix D – Consent Form

### Informed consent form (interview)

In this study we want to learn about post-growth urban mobilities. Participation in this interview is voluntary and you can quit the interview at any time without giving a reason and without penalty. Your answers to the questions will be shared with the research team. We will process your personal data confidentially and in accordance with data protection legislation (the General Data Protection Regulation and Personal Data Act). Please respond to the questions honestly and feel free to say or write anything you like.

I confirm that:

- I am satisfied with the received information about the research;
- I have no further questions about the research at this moment;
- I had the opportunity to think carefully about participating in the study;
- I will give an honest answer to the questions asked.

I agree that:

- the data to be collected will be obtained and stored for scientific purposes;
- the collected, completely anonymous, research data can be shared and re-used by scientists to answer other research questions;

I understand that:

- I have the right to see the research report afterwards.

1. **Do you agree to participate?**  Yes  No

Signed \_\_\_\_\_  
\_\_\_\_\_

Date

## Information Sheet (interview)

### Introduction

You are invited to take part in this study on post-growth urban mobility. The purpose of the study is to learn about post-growth urban mobility. The study is conducted by Jeffrey Adams who is a student in the Msc programme Sustainable Business and Innovation at the Department of Sustainable Development, Utrecht University. The study is supervised by Peter Pelzer.

### Participation

Your participation in this interview is completely voluntary. You can quit at any time without providing any reason and without any penalty. Your contribution to the study is very valuable to us and we greatly appreciate your time taken to complete this interview. We estimate that it will take approximately 60 minutes to complete the interview. The questions will be read out to you by the interviewer. Some of the questions require little time to complete, while other questions might need more careful consideration. Please feel free to skip questions you do not feel comfortable answering. You can also ask the interviewer to clarify or explain questions you find unclear before providing an answer. Your answers will be noted by the interviewer in an answer template. The data you provide will be used for writing a Master thesis report and may be used for other scientific purposes such as a publication in a scientific journal or presentation at academic conferences. Only patterns in the data will be reported through these outlets. Your individual responses will not be presented or published.

### Data protection

The interview is also audio taped for transcription purposes. The audio recordings will be available to the Master student and academic supervisors. We will process your data confidentially and in accordance with data protection legislation (the General Data Protection Regulation and Personal Data Act).

In case audio recordings will be deleted: Audio recordings will be deleted when data collection is finalized and all interviews have been transcribed.