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A Systematic Review

The Concepts of Green Growth and Degrowth in Urban Sustainable Transitions

Mirjam von Schmettau (s2373947)

University of Twente, Enschede
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Supervised by:
Dr. Le Anh Nguyen Long, University of Twente, The Netherlands
PD Dr. Matthias Freise, WWU Münster, Germany

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Abstract

We are currently facing the very urgent crisis of global warming. When the awareness for climate change rose, the global community adopted several agreements and policies in order to tackle this issue. Thus, the so-called *green growth* approach was enshrined in many policy agendas. It aims for sustainability while promoting economic growth. Meanwhile, critics occurred which doubt this synergy and suggest turning away from the concept of growth towards a *degrowth* society and economy.

The contrast between *green growth* and *degrowth* has been debated in the literature already. However, they are also related to each other through their impact on cities. Urban areas are widely considered as the place to take action against climate change, because the majority of the world population lives there, and they are responsible for the bulk of carbon emission. Hence, this bachelor thesis examines how the two concepts compare as organizing principles for urban sustainable transitions. This research is conducted by doing a systematic literature review analyzing 19 identified studies available in the database Scopus. By examining this literature adducing Wolfram's evaluative framework on the capacity of urban sustainable transitions, it is essentially concluded that neither *green growth* and *degrowth* are in every respect a superior principle for such transitions, but combining aspects of either concepts may be promising.

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1. Introduction

Climate change is among the most pressing and challenging issue of our time. Uncontrolled global warming has already deeply impacted people across the world, from California to Cape Town, and will get much worse if no action is taken. According to the special Intergovernmental Panel on Climate Change report *Global warming of 1.5 °C*, there will be more frequent heatwaves in land regions and more marine heatwaves in the future. On the one hand global warming leads to an increased risk of droughts and on the other hand to extreme precipitation events and all over the world to a loss of some ecosystems (IPCC, 2018) To counter this development, foremost radical action is needed to lower global greenhouse gas emission (Held & Roger, 2018).

In the last several decades, two distinct overarching approaches emerged to tackle this expressive development. *Green growth* describes the synergy between ecological sustainability and economic growth and is considered as an effective strategy to achieve sustainable development (Ho & Wang, 2014). In essence, it is perceived that environmental protection is to a certain extent compatible with economic growth which is seen as needed to improve the standards of living for the world's growing population. While green growth has been risen to the top of national and international agendas, a grassroots movement has been underfoot that promotes what is called *post growth* or *degrowth*. It has emerged as an alternative to green growth, developed into a social movement and is a proposal for radical change (Demaria, Schneider, Sekulova, & Martinez-Alier, 2013). The idea criticizes the current development hegemony and questions "whether ever-rising incomes for the already-rich are an appropriate goal for policy in a world constrained by ecological limits" (Jackson, 2013). Because there are many different approaches within the critics of growth, many terms emerged in this context. The distinction between post growth and degrowth seem to be blurry, in particular in the English literature. Hence, Reichel (2016) tries to give a structure. He states that one can distinguish "between postgrowth as an umbrella term allowing for many different postgrowth approaches on the one side; and degrowth as a very specific form of such an approach on the other side" (Reichel, 2016). Every post growth approach abandons the fixation on GDP growth and its accounting method and accepts absolute ecological limits to economic activity according to Reichel. For the sake of simplicity, only the term degrowth is used in the following as most literature reviewed in this thesis uses it this way.

From doughnut economies to transition towns, more and more communities are adopting policy experiments based on a degrowth approach. For instance, they adopt grassroots experiments like co-housing or promote a sharing society (Cucca & Friesenecker, 2021). This interest in degrowth solutions has been mirrored by a growing scholarly interest on the topic (see Figure 2). Representatives of this approach claim that "reducing the environmental impacts to a sustainable level would require extremely large resource efficiency improvements in the coming decades" (Xue, Walnum, Aall, & Næss, 2017, p. 17) and technical innovations on this scale, as emphasized by green growth proponents, are considered

as highly unlikely. Therefore, a profound political transformation and cultural change are needed to address the impacts of climate change according to degrowth.

The Paris Agreement and many scholars emphasize cities as the place to take action for sustainable transitions. On the one hand, a majority of world's population lives in cities and they are responsible for 71% of energy-related global carbon emission. On the other hand, they are centers of innovation. Thus, cities may tackle climate change challenges due to global warming (Rosenzweig, Solecki, Hammer, & Mehrotra, 2010). Therefore, it is necessary to examine how the green growth and degrowth concepts impact urban environmental governance. Accordingly, this thesis will tackle the following question:

How do the concepts of Green Growth and Degrowth compare as organizing principles for urban sustainable transitions?

Answering this question has both societal and scientific impact. We are facing a challenging climate crisis and reaching the limit of resources like fossil fuels. Indeed, there is an urgent need to address this problem, and Europe is trying to take a leadership position. In order to increase or keep wellbeing for humans all over the world there must be other concepts as classical economic growth. The societal impact in answering this research question is to give a proper overview of two alternative concepts to classical economic growth. The academic relevance is to fill the literature gap by providing an overview of the literature about the concepts of green growth and degrowth in their relation to cities. Thus, this bachelor thesis aims to shed light on green growth and degrowth with regard to urban areas and a comparison will take place to show their advantages and disadvantages in this context. Therefore, the sub-questions will be as follows:

Sub-question 1: How do the Green Growth and Degrowth concepts compare to one another?

Sub-question 2: In which urban contexts will Green Growth be a superior organizing principle? And in which urban contexts will Degrowth be a superior organizing principle?

Section 2 presents the historical contexts of the green growth and degrowth concepts. Section 3 presents the theoretical background for the study and Section 4 summarizes the codebook. Section 5 introduces the data and procedural methods for the systematic literature review. Section 6 presents the results, including a bibliometric and a content analysis. In Section 7, the main insights of the literature

of green growth and degrowth concepts in urban areas are discussed. Section 8 draws concluding remarks and gives an outlook on further research.

2. Historical Context of the Green Growth and Degrowth Concepts

In the late 1980s, the awareness of climate change rose in the global community and this issue reached the top of the global policy making agenda. It became the focus of several intergovernmental meetings in various places and the subject of several UN assembly solutions. These endeavors resulted in the Earth Summit in 1992 where the states agreed on the terms of the United Nations Framework Convention on Climate Change (UNFCCC) which includes global objectives connected to climate change, key principles and some basic commitments. In addition, it provided a platform for further negotiations and two years later there was an agreement on a new global deal, the Kyoto Protocol. This binding agreement established overall and individual greenhouse gas reduction targets and when failing to meet them, states were subject to certain punitive consequences. At this time, climate change was considered as a problem to be solved by governments through international agreements (Held & Roger, 2018). Thus, states assumed the dominate role. In the negotiation process, various aspects of the Protocol raised concerns and many states like the United States and China did not ratify it, so the largest polluters were not involved in the mechanisms of mitigating emissions.

Years after Kyoto, the Copenhagen Accord initiated a move towards a model of global climate governance that would operate in a strictly voluntary governance sense at the bottom. It sets the 2°C long-term target for the first time. However, the Copenhagen Accord was not a binding international agreement but a political statement of intentions which led to the approach of the Paris Agreement with an overarching temperature goal to hold the temperatures below 2°C and tending more to 1.5°C. It sets such targets within a legally binding agreement and was ratified by 179 parties in 2016. In contrast, the Paris Agreement puts emphasis on non-state and sub-state actors like cities and civil society groups as important parts of transnational climate governance initiatives (Held & Roger, 2018). Countries and communities have mobilized to meet these commitments. Some of them adopt policies taking a green growth perspective, others prefer a degrowth approach.

Under President Trump, the United States withdrawal the Paris Agreement and the political constellations have changed significantly in international climate policy. China has also shown little visible leadership in international climate policy in the early years since the agreement (Kurze, 2020). This meant great expectations for the EU, which so far has already shown relatively great creative power in this field. Even beyond the international stage, the EU is perceived as a reference point for ambitious climate protection. For instance, the movement Fridays For Future has its starting point in the EU states and is particularly active there. The result is increased social pressure on the EU. Overlooking the 1.5°C goal and the EU's role in the Paris Agreement, the European Green Deal was developed and launched

in 2019. It is a green strategy for growth which particularly aims for climate neutrality until 2050 (Kurze, 2020).

The policies and programs enshrined within the European Green Deal largely reflect a preference for green growth, however its origins lay in the Asian and Pacific regions as policy concept. While clear emphasizing the GDP growth, states like China first adopted the green growth path in order to become more sustainable (Ho & Wang, 2014).

The idea of green growth goes back to sustainable development first popularized by the Brundtland Commission (Jacobs, 2013) which defined it as follows: “Sustainable development seeks to meet the needs [...] of the present without compromising the ability to meet those of the future” (WCED, 1987). This was first institutionalized by the Earth Summit and the official institutions promoting green growth currently see it as a way to achieve sustainable development. They claim that protecting the environment can even contribute to better growth. The term green growth became very popular in the course of the financial crisis and the approach was supposed to “provide a way out of the stagnation [...] in supporting the material aspirations of the poor, while still respecting general environmental concerns” (Sterner & Damon, 2011, p. 7165). The OECD defines green growth the following: “Green Growth means fostering economic growth and development while ensuring that natural assets continue to provide the resources and environmental services on which our well-being relies” (OECD, n.d.). In particular, the World Bank, OECD, United Nations Environment Programme (UNEP) and the new established Global Green Growth Institute developed and promote green growth strategies (Jacobs, 2013).

Degrowth emerged in France in the last decades “as a project of voluntary societal shrinking of production and consumption aimed at social and ecological sustainability. It quickly became a slogan against economic growth [...] and developed into a social movement” (Demaria et al., 2013, p. 192). In the beginning of the 21st century, the movement protested e.g. for car-free cities or food cooperatives and was followed by manifold publications and conferences. The first Degrowth conference took place in Paris in 2008, “which also marked the birth of degrowth as an international research area” (Demaria et al., 2013, p. 195). The roots of degrowth lay in different philosophical horizons, movements and intellectual sources. For one thing, it criticizes the idea that countries in the global south need to follow the development of western countries. Furthermore, the idea of degrowth includes a quest for democracy and thus the close link between the political system and in particular short economic interests should be broken down. Defending ecosystems and the constraints linked to resource depletion and waste disposal are other intellectual sources for degrowth (Schneider, Kallis, & Martinez-Alier, 2010). It essentially “provides interesting points of departure for conceptualising and practicing alternatives to Western style consumer capitalism” (Fournier, 2008, pp. 528-529). The degrowth exponents doubt that sustainable

growth is possible one way or another as they see the expectation in technological and efficiency improvements for sustainability not fulfilled (Schneider et al., 2010). In that sense, degrowth challenges the green growth approach as an aspirational pathway of political agendas (Demaria et al., 2013).

A look at how the interests among on both topics in the literature, in their relationship to cities, has progressed over time suggests that interest in both green growth and degrowth has risen rapidly over the last two decades. Figure 1 and Figure 2 were created using a keyword search¹ on Scopus. They show that the number of scientific publications grew every year since 2008 and increased extremely in the last years.

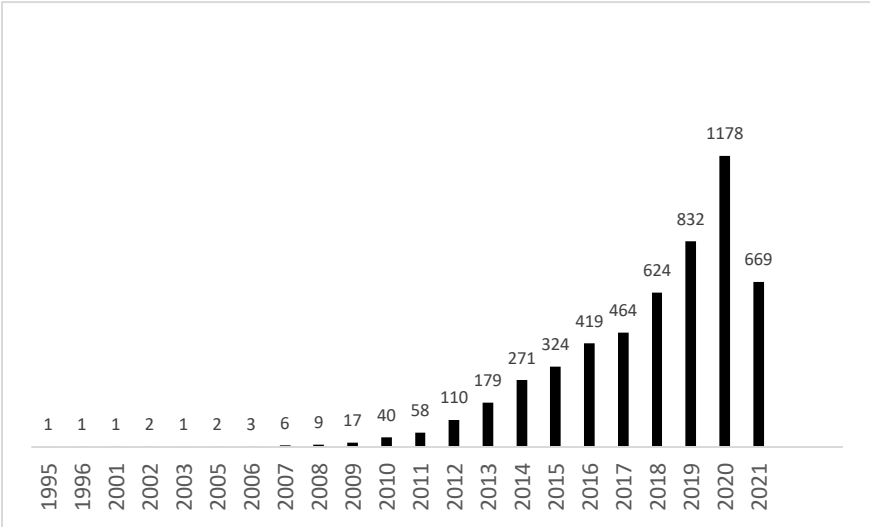


Figure 1: Number of Publications per Year for Green Growth and Cities on Scopus (N=5211).

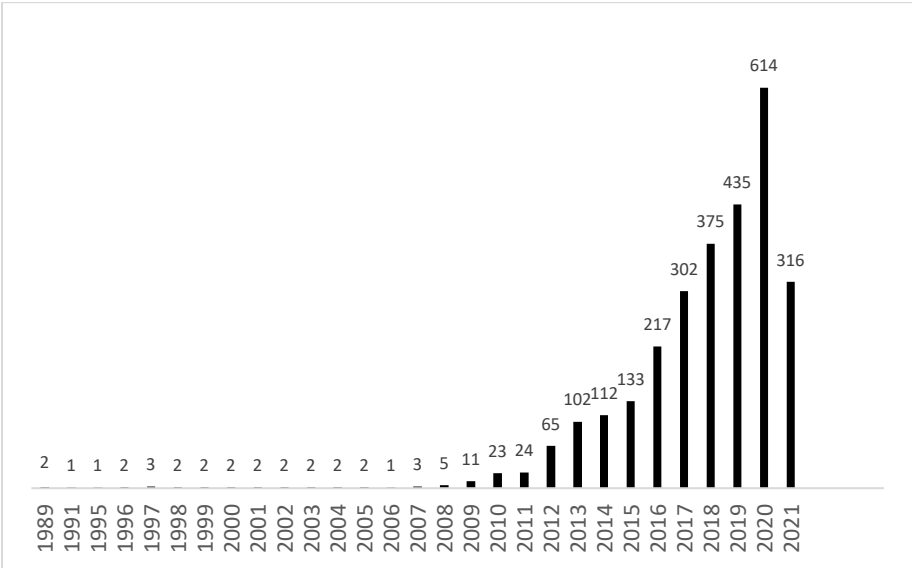


Figure 2: Number of Publications per Year for Degrowth and Cities on Scopus (N=2763).

¹ The operationalized keywords for Figure 1 are ALL (“green growth” AND (cit* OR urban* OR metropol*). For Figure 2 the keywords are ALL (“post growth” OR degrowth) AND (cit* OR urban OR metropol*)).

The contrast between these two concepts has been debated in the literature by some researchers (Hickel & Kallis, 2020; Jakob & Edenhofer, 2014; Shao, 2020). However, how these concepts are related through their impact on cities has not yet been examined in a literature review, even as – as demonstrated above – scientific interests in the interplay between these concepts and the urban governance is growing.

3. Theory

3.1 Urban Sustainable Transitions

The outcome variable of the bachelor thesis is *urban sustainable transition*. Wolfram (2018) explores the role of cities in the emergence and formation of grassroots niches for sustainability transitions. He states that cities provide ‘protected spaces’ in the form of niches which represent a source of new ideas and solutions for system innovations and change (Wolfram, 2018). Similarly, Rosenzweig and Solecki (2018) argue that transformation, in cities is required in order to fulfil their leadership potential on climate change. They use the term transformation “to describe what cities must do to simultaneously improve climate resilience and achieve the position effect of low-carbon sustainable development” (Rosenzweig & Solecki, 2018, p. 756). However, transformation is considered as both a ‘state’ and a ‘process’ and comes from ecology where systems make shifts from the states of collapse and resistance to resilience and transformation. To adopt pathways there can be a transition from a lower state (collapse & resistance) to a higher state (resilience & transformation) or vice versa. “Potential interventions and policy choices are more plentiful in the ‘higher’ states” (Rosenzweig & Solecki, 2018, p. 757). Both, green growth and degrowth claim to provide a mechanism for triggering such a transition. However, the methods for shifting pathways offered by them can differ.

It is therefore important to understand what the interesting dimensions of transformations are. Castán Broto et al. (2019) draw upon Wolfram’s evaluative framework to determine the transformative capacity of sustainable initiatives of urban systems. Urban transformative capacity is defined “as the ability of urban system (inclusive of physical and human dimension) to reconfigure and move towards a new and more sustainable state” (Castán Broto, Trencher, Iwaszuk, & Westman, 2019, p. 450). The identified components provided by Wolfram are summarized in the article of Castán Broto et al. (2019) to operationalize the transformative capacity criteria which are also used in this thesis to determine the outcome of green growth and degrowth initiatives. The applied criteria are presented briefly in the following:

- Inclusive, multiform urban governance
 - Participation/ inclusiveness
 - Diverse governance modes/networks
 - Sustained intermediaries and hybridisation

- Transformative leadership
- Empowered communities
 - Social needs
 - Autonomous communities
- System awareness
 - Baseline analysis and system(s) awareness
 - Recognition of path dependencies
- Foresight
 - Co-production of knowledge
 - Collective vision for change
 - Alternative scenarios, future pathways
- Experimentation with disruptive solutions
- Innovation embedding
 - Resource for capacity development
 - Mainstreaming transformative action
 - Regulatory frameworks

The criterion *inclusive, multiform urban governance* and its sub criteria are considered satisfied when in general collaborations of different actors, especially including citizen and civil society organizations, take place in planning and decision-making. *Transformative leadership* should provide a linkage between the local and global level to be deemed satisfied. *Empowered communities* and the sub-criteria should contain “strategies seeking to improve the wellbeing and quality of life of urban citizen” (Castán Broto et al., 2019, p. 454) and the ability for great independence of the community. Furthermore, *System awareness* should be fulfilled. This is to gather knowledge about the existing structures and barriers and thus plan expedient interventions. In order to do so, the criterion *Foresight*, including its sub-criteria and the criteria *experimentation with disruptive solutions* as well as *innovation embedding* are important components (Castán Broto et al., 2019).

3.2 Transformative Capacity of Green Growth

Green growth is considered as “a level of environmental protection which is not being met by current or ‘business-as-usual’ patterns of growth” (Jacobs, 2013, p. 198). The OECD presents potential impacts of green growth initiatives in cities which include an increase in jobs due to the expansion of the green sector, “an increase in a city’s attractiveness to firms and human capital” (OECD, 2013, p. 10), a rise in the production of green commodities and services and a rise in the value of urban land (OECD, 2013). These impacts could foster urban sustainable transition, e.g., by satisfying the criterion *empowered communities*, in particular *social needs*, to provide capacity for urban sustainable transition of urban dwellers. In addition, in the governing process various stakeholders should be involved, thus an “inter-

municipal co-operation to manage urban services” (OECD, 2013, p. 10) is envisaged and therefore the *inclusive multiform urban governance* could be satisfied further on. In that sense, it could be an approach to provide transformative capacity for urban sustainable transition. However, green growth is based on the assumption that “technological change and substitution will allow us to absolutely decouple GDP from resource use and carbon emission” (Hickel & Kallis, 2020, p. 469), and for now there is no clear evidence for this hypothesis.

3.3 Transformative Capacity of Degrowth

Unlike in the case of green growth, degrowth is not a consistent and codified paradigm but rather the conflux of various ideas and political actions (Khmara & Kronenberg, 2020). However, it “represents one of the most far-reaching forms of sustainability transitions” (Khmara & Kronenberg, 2020, p. 2). Degrowth initiatives usually result from grassroots experiments, hence they develop in a bottom-up way (Khmara & Kronenberg, 2020). These actions can either attain the criteria to satisfy *empowered communities* as well as the *inclusive, multiform urban governance* and can in that sense be considered as successful sustainable transitions. Furthermore, Schneider (2010) gives an overview about the characteristics of the degrowth transformation: It “involves a reduction of the capacity to produce and consume in a way that is sustainable, balanced, democratic, convivial, ecological, social, positive, cultural, equitable, innovative, diversified, targeted, local & global and transitory” (Schneider, 2010). Considering these attributes, degrowth initiatives could provide for several criteria for urban sustainable transitions. However, there are also doubt about the transformative capacity of degrowth. For example, there is a danger that many degrowth practices will remain on a small scale “with little potential to contribute to a regime shift” (Khmara & Kronenberg, 2020, p. 11) and in that sense may lack *transformative leadership*.

4. Codebook for Green Growth and Degrowth

In order to apply Wolfram’s evaluative framework on green growth and degrowth initiatives, a codebook was developed to identify important aspects and characteristics of these concept in an urban context. Therefore, different strands of literature reviews on green growth and degrowth concepts are adduced. The literature was found using a key word search² and filtering out relevant reviews on the respective issues.

In sum three main overarching themes that serve as indicators of the growth concepts are found in the reviews: areas, practices, and actors. They are summarized in the codebook (the full version can be found in the data appendix). The categorized codes are either assigned to be connected to green growth or degrowth approaches, however, some codes are connected to both concepts. This

² TITLE-ABS-KEY (“Green Growth” AND “literature review*”) and TITLE-ABS-KEY (“Post Growth” OR Degrowth) AND “literature review*”)

categorization is mainly based on whether the screened reviews specifically emphasize the aspects as being part of the respective growth concepts. That does not mean that e.g., democracy does not play a role in green growth processes, but degrowth emphasizes it as a very important value of its approach. Below, the codebook for areas is presented to give a vivid excerpt (Table 1).

Table 1: Areas of Green Growth and Degrowth.

Concept		Description	Authors	Green Growth	Degrowth
Energy	Energy consumption	Crucial for economic growth	Ferraz et al. (2021)	X	
	Energy security	Uninterrupted availability of energy sources at an affordable price	Štreimikiene et al. (2016); Alrasheedi et al. (2021)	X	
Economy	Decoupling	Decoupling economic growth from resource use and emission	Wiedenhofer et al. (2020)	X	
	Downscaling	A decrease in overall business activities (in emission and production)	Hankammer et al. (2021)		X
	(Inclusive) Growth	Important indicator of green growth; growth that improves the welfare of both current (inclusive) and future (green) generations	Merino-Saum et al (2020); Berkhout, et al. (2018)	X	
	Declining Growth (GDP)	Not the goal per se, however it is a consequence that degrowth needs to be able to deal with	Hardt & O'Neill (2017)		X
	Steady-State Economy	After Declining when the right size of economy is reached by degrowth	Hankammer et al. (2021); Demaria et al.		X
	Consumption		Khmara & Kronenberg (2020); Muler González & Galí Espelt (2020)	X	X
	Production		Khmara & Kronenberg (2020)	X	X
Innovation	Technological Innovations/ Solutions	Use/ develop clean and simple production technologies	Ferraz et al.(2021); Nepal et al. (2021); Demaria et al. (2013)	X	

	Socio-Technological Innovations		Gibbs & O'Neill (2014)	X	
	Socio-Cultural Innovations	New forms of living and producing; non-technical proposals for reducing material and energy flows	Khmara & Kronenberg, (2020) Demaria et al. (2013)		X
	Institutional, financial, legal innovations		Calisto et al. (2020)	X	X
Environmental Protection	Ecology	Preserve ecosystems by the reduction of human pressure over ecosystems and nature	Demaria et al. (2013)	X	X
	Environmental boundaries	Boundaries of GHGs, natural habitats, waste, water, nonrenewable resources, etc.	Ansah & Sorooshian (2019)	X	X
	Emission/pollution control	Reduction of CO2 and harmful substances enter the atmosphere	Ferraz et al. (2021); Wiedenhofer et al. (2020)	X	X
Socio-Cultural Area	Political change		Hankammer et al. (2021); Shao (2020); Sconfienza (2020)		X
	Social & Cultural Change		Hankammer et al. (2021); Shao (2020); Sconfienza (2020)		X
	Individual behavior	Less time spent on formal work and consumption, more time can be dedicated to other activities which are fundamental to one's wellbeing (social relations, political participation, physical exercise, spirituality and contemplation)	Demaria et al. (2013)		X
	Social movement/Activism	Degrowth as a political slogan, roots in activism,	Hankammer et al. (2021); Shao, 2020; Khmara & Kronenberg (2020)		X
Values	Human-well being		Shao (2020); Demaria et al. (2013), Meriono-Saum et al. (2020)	X	X

(social & environmental) Justice		Shao (2020); Calisto et al. (2020); Khmara & Kronenberg (2020); Demaria et al. (2013)	X	X
(Bio-)diversity		Shao (2020); Khmara & Kronenberg (2020)	X	X
Resilience		Merino-Saum et al. (2020)	X	
Freedom of Choice		Xue et al. (2017)	X	
(Economic) Competitiveness		Schuetze & Chelleri (2016)	X	
Conviviality		Calisto et al. (2020); Muler González & Galí Espelt (2020)		X
Sufficiency	Enough and qualitative consumption	Hankammeret al. (2021); Calisto et al. (2020)		X
Democracy		Demaria et al. (2013)		X
Participation		Khmara & Kronenberg (2020)		X
Simplicity		Khmara & Kronenberg (2020)		X
Equity		Kalaniemi et al. (2020)		X
Solidarity		Khmara & Kronenberg (2020)		X
Voluntariness	Voluntary participant activities play a significant role, partly substituting wage labor	Khmara & Kronenberg (2020)		X

Source: own elaboration.

4.1 Areas

For this research, areas are important because they represent the different action fields for either green growth or degrowth initiatives which can then be transferred to the urban context. Initiatives in various

areas are needed because climate change is a very complex issue and affects many different areas. The identified areas are divided into the *energy area*, *economy*, *innovation*, *environment*, the *socio-cultural area* and *values* (see Table 1) These are areas which are relevant as all of them contribute in different ways to climate change mitigation.

The *energy* sector is in particular linked to green growth approaches, as *energy consumption* and *energy security* are considered as crucial for continued economic growth (Alrasheedi et al., 2021; Ferraz, Falguera, Mariano, & Hartmann, 2021; Štreimikiene, Strielkowski, Bilan, & Mikalauskas, 2016). For the *economic* area, there are especially two opposed ideas, as mentioned before *decoupling* growth from resource use and emission (green growth) (Wiedenhofer et al., 2020) and an overall *downscaling* of emission and production (degrowth) (Hankammer, Kleer, Mühl, & Euler, 2021). For the area of *innovations*, one can divide above all between *technological innovations/solutions* (Demaria et al., 2013; Ferraz et al., 2021; Nepal, Phoumin, & Khatri, 2021) and *socio-cultural innovations* (Khmara & Kronenberg, 2020). Technological innovations are a central pillar of green growth while degrowth tended to focus on socio-cultural innovations. The area of *environmental protection* matters for both approaches because either of them accept certain *environmental boundaries* (Ansah & Sorooshian, 2019) and tries to provide solutions to preserve the ecosystems (Demaria et al., 2013). The *socio-cultural area* is primarily linked to the degrowth approach as it clearly strives for *political, social* and *cultural change* (Hankammer et al., 2021; Sconfienza, 2020; Shao, 2020) and emerged as a *social movement* (Khmara & Kronenberg, 2020).

Furthermore, the values *human well-being*, *(social & environmental) justice* and *(bio-)diversity* are essential for both, green growth and degrowth approaches (Calisto Friant, Vermeulen, & Salomone, 2020; Demaria et al., 2013; Khmara & Kronenberg, 2020; Merino-Saum, Clement, Wyss, & Baldi, 2020; Shao, 2020). *Resilience, freedom of choice* and *economic competitiveness* are rather considered as green growth values (Merino-Saum et al., 2020; Schuetze & Chelleri, 2016; Xue et al., 2017). While *sufficiency, democracy, voluntariness, participation, simplicity, solidarity* and *equity* are rated among degrowth values (Calisto Friant et al., 2020; Demaria et al., 2013; Hankammer et al., 2021; Kalaniemi, Ottelin, Heinonen, & Junnila, 2020; Khmara & Kronenberg, 2020; Muler González & Galí Espelt, 2020).

4.2 Practices

This part of the codebook further displays the different practices and actions conducted in the various areas mentioned above. They are relevant as typical practices within both concepts are identified and serve as a framework in the analysis. For green growth, the main goal is to *boost economic growth*, e.g., with green infrastructure expansion, and *reduce emission* at once. This is done by supporting *alternative energy sources*, implementing *carbon capture and storage (CCS)* systems and *carbon offsets* and *improve the resource and energy efficiency*. Another approach to reduce emission is to *reduce the*

deforestation and forest degradation (Ansah & Sorooshian, 2019; Berkhout, Bouma, Terzidis, & Voors, 2018; Ferraz et al., 2021; Nepal et al., 2021; Vuola et al., 2020; Wiedenhofer et al., 2020). *Reducing inequality and sustainable (urban) planning* including *land management, sustainable building/housing, sustainable transportation, waste management and water management* are also typical practices within green growth initiatives (Alrasheedi et al., 2021; Ansah & Sorooshian, 2019; Berkhout et al., 2018; Ferraz et al., 2021; Hankammer et al., 2021; Wang, Liu, Gu, Cheng, & Li, 2019).

For degrowth, implementing *non-capitalistic practices and institutions* including *grassroots experiments* and the overall *reduction in throughput* are crux of the matter (Khmara & Kronenberg, 2020; Sconfienza, 2020). By doing so, these approach aims to *relocalize the economy* and alike green growth strives to *reduce inequality*. However beyond green growth, it intends an *income distribution within and among countries* (Hankammer et al., 2021; Khmara & Kronenberg, 2020; Muler González & Galí Espelt, 2020). *Reducing emission* is also an important pillar of degrowth, however technical solutions in form of e.g., renewable energy sources does not play such an important role rather the *use and promotion of low carbon* are crucial practices (Khmara & Kronenberg, 2020). Furthermore, *sustainable (urban) planning* practices are popular for degrowth proponents as well. But instead of retrofitting in buildings and promoting electric cars (green growth), e.g., co-housing and bicycle traffic are widespread notions of degrowth (Khmara & Kronenberg, 2020).

4.3 Actors

In the last table of the codebook (see data appendix), the actors of the respective growth concept are presented. They are important for the thesis because the initiatives taken with green growth or degrowth can be positioned and compared at different levels. On the one hand, promoters and actors of green growth are *international organizations* like the Intergovernmental Panel on Climate Change (IPCC), the United Nations, the Global Green Growth Institute (GGGI), the World Bank, the OECD, the European Union and the International Energy Agency (IEA) (Berkhout et al., 2018; Merino-Saum et al., 2020; Nepal et al., 2021; Štreimikiene et al., 2016; Vuola et al., 2020; Wiedenhofer et al., 2020). On the other hand, *nation states* are mostly actors according to green growth (Vuola et al., 2020). In total, these actors usually adopt top-down approaches.

Typical for degrowth actions are the *civil society* and *grassroots activists* including so-called *grassroots newtopias*. Compared to the national level, *local and regional authorities* are appearing more inclined in implementing degrowth approaches in policy making (Demaria et al., 2013; Hankammer et al., 2021; Khmara & Kronenberg, 2020). Overall, these initiatives are usually implemented bottom-up.

Universities and other educational institutions as well as the *private sector* can occur as actors for both, green growth and degrowth approaches (Ansah & Sorooshian, 2019; Gibbs & O'Neill, 2014; Hankammer et al., 2021).

5. Methodology and Data Sources

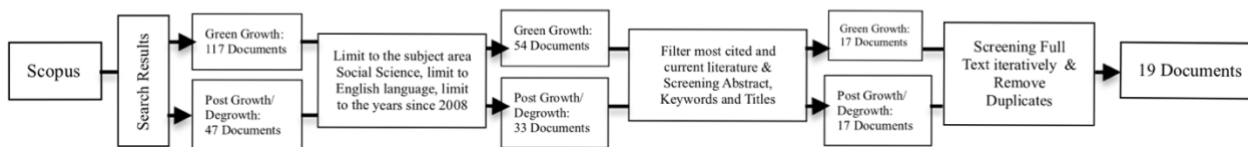
After developing a framework (codebook) to synthesize the existing areas, practices and actors of green growth and degrowth, this thesis finds its basis in a structured literature review of relevant texts which should enable to get new insights of these concepts for urban sustainable transitions. The method of systematic literature reviews (SLR) was chosen to bring the reader up to date with the current literature on the field and form the basis for further research. The research method structure used in this bachelor thesis is based on other systematic literature reviews (Ferraz et al., 2021; Hankammer et al., 2021; Merino-Saum et al., 2020).

Due to the quality of research, only peer-reviewed literature is considered within curated databases. The Scopus database was selected “due to its broad coverage of economic, environmental and social studies” (Merino-Saum et al., 2020, p. 4) and because it was used in several similar research projects before. A set of keywords was identified to search for documents: “Green Growth” OR “Post Growth/Degrowth” AND sustainable AND cities OR metropolitan areas OR urban areas.

In addition, only articles published since 2008 were considered, as this was the year of the first degrowth conference and the term became popular for researchers (see Figure 2). Furthermore, the number of publications increased substantially after that year for both, green growth and degrowth. At last, the subject area of social science and related topics was selected to set the thematic focus on the field of the bachelor program for which this thesis is completed. In order to apply the codebook on the identified literature, the software MAXQDA was used to code the documents. While coding, some codes were adjusted, added or removed. Thus, it was a semi-closed coding process (mixed coding).

6. Analysis

The bibliographic data search process (see Figure 3) on Scopus registered 117 Documents for green growth approaches in cities and 47 documents for degrowth approaches in cities. After limiting the search results only to the subject area of social science, English literature and published since 2008, 54 documents for green growth and 33 documents for degrowth remained. In a next step, the most cited and current documents were selected and after screening their abstracts, keywords and titles, for both concepts 17 documents remained in the shortlist. In a last step, the full text of each article was screened and duplicates which occurred for both concepts were removed. In the end, 19 documents were considered as suitable for the systematic literature review analysis. In Figure 3, the process of filtering the literature can be retraced.



Date of Search: May 25, 2021

Search String: Title-ABS-KEY((sustainab* AND (cit* OR urban* OR metropol*) AND ({post growth} OR degrowth)); Title-ABS-KEY((sustainab* AND (cit* OR urban* OR metropol*) AND {green growth}))

Figure 3: Screening process.

6.1 Bibliometric Analysis

In this section, some bibliometric backgrounds of the identified articles are analyzed. Hence, it is presented when the documents were published (Figure 4), where this took place (Figure 5) and to which subject area they are connected (Figure 6).

Figure 4 shows, that the most of the 19 documents were published in 2016 and 2020 with four articles each. The first published document included in the review was published in 2014. What should be pointed out is that there are even three documents from 2021 deemed as expedient for the review although this year is only half over. This underlines the gained currency of the topic as mentioned before (cf. Section 2).

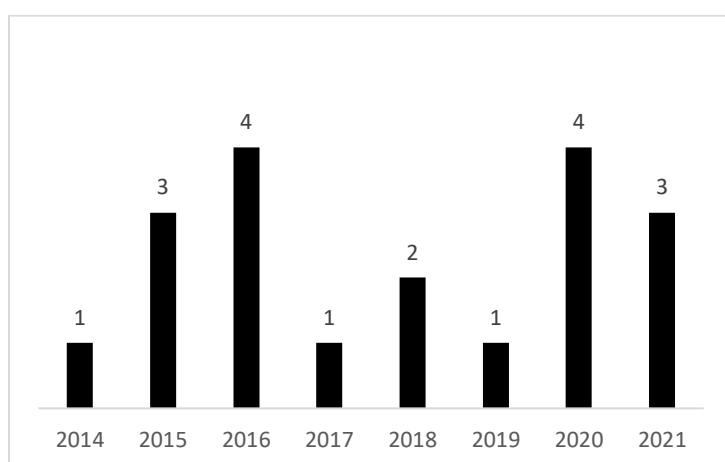


Figure 4: Documents by Year (N=19).

The places of publishing are illustrated in Figure 5. More than 19 places appear as some papers have more than one country they were published in. Most of the identified articles are published in European or Asian countries. The most documents were published in Norway (5). Other northern European countries like Denmark, Iceland, Sweden, Finland and the Netherlands are represented as

places of publishing as well as the UK, Italy, Austria and Portugal. These places are also reflected in the article's contents. Besides, there were also papers published in South Korea, China, Pakistan and Thailand. Thus, some south and east Asian countries are also represented in this literature review and the articles also deal with these countries partially contend-related. The United States and Canada appear as places of publishing as well. However, what attract attention is that there is no place of publishing in African countries which account for a large part of the world population. South America as well as north Asian countries are also not represented. This could be a limitation in the review's results as they are probably not applicable to each part of the world.

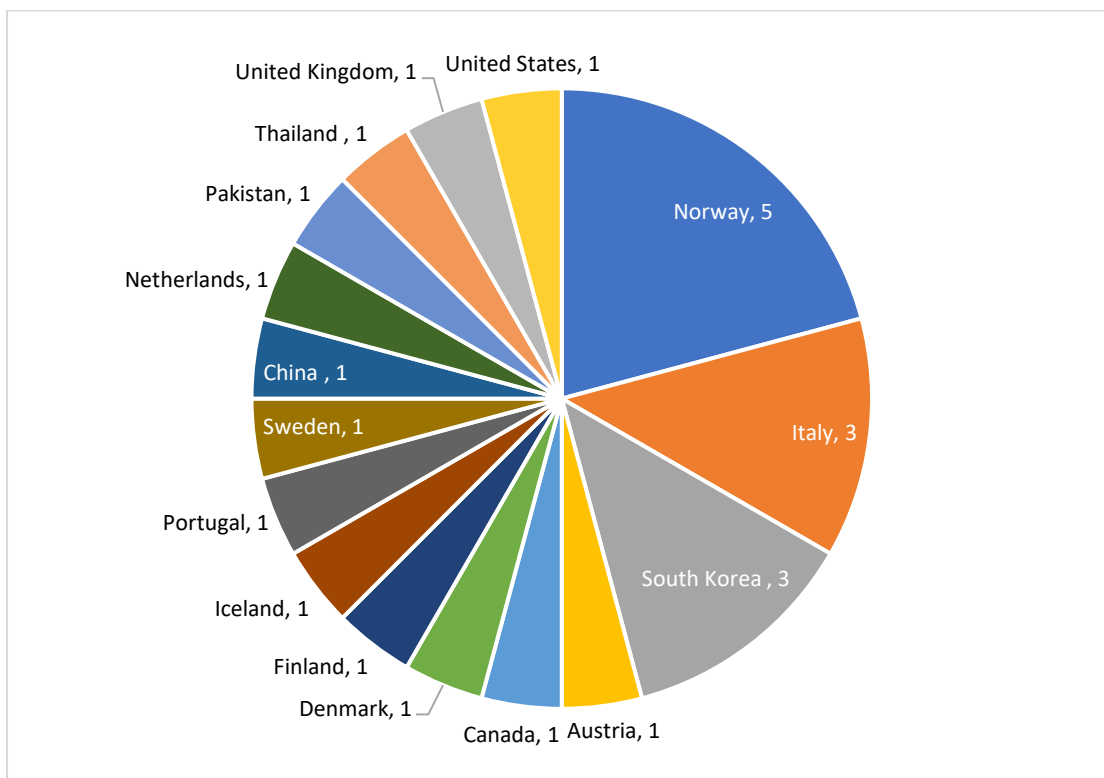


Figure 5: Documents by Country.

Figure 6 gives an overview of the subject areas to which the identified documents could be assigned to. Here again, more than 19 papers were assigned to the respective areas as some account for more than one subject. The subject area social science of course makes up for the greatest part because all papers represent this subject. Many papers are also assigned to environmental science (14) and the energy area (6). This also displays the areas identified for the codebook of the review and are important to deal with environmental and climate protection. In addition, a few papers deal with earth and planetary science (2), agricultural and biological science (1) and business, management and accounting (1).

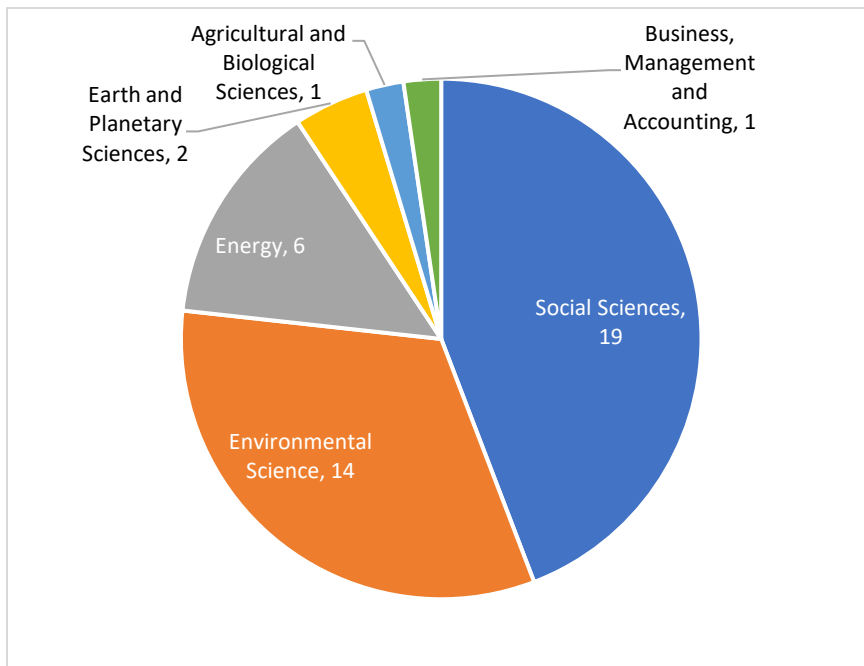


Figure 6: Documents by Subject Area.

6.2 Content analysis

In the following section, the literature on green growth and degrowth is synthesized regarding the areas, practices and actions of the approaches in an urban context. For the most part, the practices and actions cannot be viewed in isolation as the practices take place in the various areas and can often be categorized as more than one practice or area. A detailed list of the assigned codes can be found in the data appendix.

Areas, Practices and Actors of Green Growth Approaches in Cities

In the different strands of literature, a few areas and practices of green growth, partly of certain cities are introduced. For example, Boston stands out as a city striving for green growth. Inter alia, the Regional Green House Gas Initiative was established, which aimed “to reduce emission by auctioning carbon through a cap and trade programme for power plant emission” (Gibbs & O’Neill, 2014, p. 208). Thus, CCS was implemented as a measure to reduce emission and takes place in the economy and energy area. Other practices to reduce emission included energy efficiency strategies in order to improve the resource and energy efficiency like implementing green building requirements (Gibbs & O’Neill, 2014). This is also part of the practices for sustainable (urban) planning, e.g., providing sustainable houses by fitting out buildings “with roofs that have the ability to easily incorporate solar power and solar thermal systems in the future” (Gibbs & O’Neill, 2014, p. 209). Other practices implemented in Boston were the adoption of innovative policies to stimulate the economic growth (economy area), especially the growing job market regarding the clean-tech industry. In particular, this includes the support for alternative and renewable energy initiatives by e.g., creating incubator space for start ups, putting up capital and provide R&D support (Gibbs & O’Neill, 2014). Thus, the areas technological

innovation/solution, institutional innovation and (inclusive) growth play a major role in order to achieve the main goal: reduce (carbon) emission.

The Port of the metropolis Los Angeles ranks among of the world's busiest seaports (Port of Los Angeles & City of Los Angeles, n.d.) and seeks to reduce port-related pollution and emission by implementing green growth practices (area of environmental protection) which call for a green transition by replacing or retrofitting drayage trucks, ships, cargo equipment, harbor craft and locomotive engines (De Lara, 2018). Next to the goal of emission reduction, the investment in (innovative) green technologies should strengthen the "regional competitive advantage over other port regions" (De Lara, 2018, p. 541) and provide jobs which should counteract societal imbalances. Thus, the strategies to "green" the port include the areas of technological innovation in order to reduce emission and the value human well-being by reducing inequality.

Other examples for the green growth approaches can be found in South Korea. Urban mega projects which can be found, among other cities, in Seoul attempt "to reshape and regenerate [...] city districts by enhancing urban environmental quality and the quality of functionality of public spaces" (Schuetze & Chelleri, 2016, p. 2). The most important aspect of such projects is a significant densification of the city area (Schuetze & Chelleri, 2016) which highlights land management as a widespread practice. Furthermore, South Korea pursue urban green energy strategies, accordingly the energy area is covered, which should lead to the production and consumption of renewable energy in order to reduce emission (J. S. Lee & Kim, 2016, p. 21). To further expand its strategy, currently South Korea developed a Green New Deal which is a "national strategy for the post-COVID era" (J. H. Lee & Woo, 2020) and include measures for cities. As well as the green growth strategies developed in response to the financial crisis, it should compensate the pandemic's impact and "lay the foundation for future economic growth" (J. H. Lee & Woo, 2020, p. 1) while striving for sustainable transitions. It includes a green transition of infrastructure (smart grids of water supply system, smart ecological factories, renewable energy equipment in buildings, electric and hydrogen vehicles, etc.) by offer incentivizes to "prospective businesses to lead the green industry and establishing low-carbon and green industrial complexes" (J. H. Lee & Woo, 2020, p. 9) and expanding R&D on new technologies especially on ICTs and AI. On the one hand, these practices shall create new jobs and improve the competitiveness in future global markets. On the other hand, the urban ecosystems shall be restored (J. H. Lee & Woo, 2020). Hence, the emission reduction also backs in particular on technological innovations/solutions and emphasis is put on further growth, thus the economy area has a central role to play here as well as (economic) competitiveness and environmental protection.

Especially in Scandinavia, green growth initiatives have been implemented in urban areas in particular in form of sustainable (urban) planning. The cities of Copenhagen and Oslo seek to reduce

negative environmental impact by sustainable building/housing, sustainable transport and land management. Land management provides for compact urban development, thus densification (Xue, 2015) and offers many advantages “in terms of the protection of natural landscapes, arable land and biodiversity” (Næss, Saglie, & Richardson, 2020, p. 152) and thus contributes to the area of environmental protection. It includes a high-density development, mixed land use and reusing built-up areas. For example, new houses should be constructed on brownfields instead of greenfields. By doing so, the land use efficiency is improved and undeveloped land is protected. In addition, due to shorter distances between destinations the energy consumption for transportation is reduced (Xue et al., 2017). The housing sector is linked to densification as “dense and concentrated types of dwellings” (Xue et al., 2017, p. 11) are required. On the one side, this type of dwellings is more efficient regarding the use of building materials, energy consumption and land resources. On the other hand, the green growth approach proposes the focus on energy-efficient building technologies, e.g., for space heating and cooling (Xue et al., 2017). Lastly, the Scandinavian cities emphasize an electrified transport sector in order to achieve sustainable transportation. Thus, the core focus is again clearly on technological innovations/solutions, the energy and economy area and environmental protection.

The Sustainability and Resilience Benefits Assessment (SRBA) Framework was developed to identify and assess sustainable urban activities within the green growth narrative. Practices that “contribute to job creation, urban attractiveness, supply of green products and services and increased urban land values” (Grafakos, Gianoli, & Tsatsou, 2016, p. 4) are highlighted. Furthermore, it identifies the sections of green growth interventions like waste volume reduction, alternative transport fuels and urban greening (forests, wetlands, green bets, etc.). Thus, sustainable (urban) planning is again emphasized as an important green growth practice.

The actors of green growth activities identified in the reviewed literature are briefly synthesized in the following. Most commonly these are top-down projects led by national and local authorities as well as international organizations (Castell et al., 2015; Gibbs & O'Neill, 2014; J. H. Lee & Woo, 2020; Schuetze & Chelleri, 2016). For instance, as already mentioned above, South Korea's Green New Deal policy is a national strategy. Besides, the European Union as an international organization has also “designed their COVID-19 recovery plans with a strong focus on a transition to a ‘decarbonized’ economy” (J. H. Lee & Woo, 2020, p. 1) top-down, as well as the Chinese parliament which decided for green growth measurements. Of course, also a few bottom-up initiatives occurred in the reviewed literature like the citizen participation in a city project in Oslo where knowledge of air quality was gathered (Castell et al., 2015). Public-private partnerships and universities as well as other educational institutions also play a big role for green growth, as they are very important for the development of absolute necessary technological innovations/solutions required for green growth (Gibbs & O'Neill, 2014).

Areas, Practices and Actors of Degrowth Approaches in Cities

In the following the areas and practices from the reviewed literature are synthesized regarding their degrowth approaches in urban areas. As mentioned above, Copenhagen and other cities or countries developed a green growth strategy to become more sustainable. However, these strategies are criticized by some authors and instead a degrowth strategy is emphasized. This approach highlights the reduction of consumption and production (economy area), so the overall reduction in throughput is envisaged (Krähmer, 2020). For example, “the reduction of per capita living spaces should favour shared living over new construction” (Krähmer, 2020, p. 15) and not only car usage should be reduced but also its possession. Therefore, rather than new and innovative technologies, the development of socio-cultural innovations and change is envisaged in cities. But parallels to green growth can also be drawn as practical proposals like the transition towards renewable energy and the improvement of energy efficiency also play a role (Krähmer, 2020).

Degrowth transformative planning can be considered as “counter-hegemonic, inspired by normative theories, utopian and [...] often initiated by grassroots” (Xue, 2021, p. 6). Next to the reduction of environmental impacts (environmental protection), the reduction of inequality is one of the foundations of these approaches and thus the promotion of human well-being. This requires on the one side an equal distribution among the people and on the other side minimum and maximum standards to secure basic needs and prevent people from possessing too much (Xue, 2021; Xue et al., 2017). One example to promote equity is the implementation of a universal basic income, e.g., as tested in Finland (Kalaniemi et al., 2020). This idea is accompanied by downscaling consumption and redefining the concept of work (e.g., work time reduction and work sharing) (Fauré, Svenfelt, Finnveden, & Hornborg, 2016; Kalaniemi et al., 2020). Further examples for grassroots experiments in cities would be community gardens and permaculture workshops, lending libraries for tools and many other things, repair cafés, permeable driveways and so on (Poland et al., 2019).

The city of Vienna held a leading position in the field of sustainable housing according to degrowth and serves as a good example as it emphasizes social justice, voluntary simplicity and a deepened democracy as important values in housing (Cucca & Friesenecker, 2021). The focus is not primarily on building new houses but on transforming existing houses into communal houses (Co-housing). This implies “a profound change in management and inhabitants’ participation” (Cucca & Friesenecker, 2021, p. 4) and provides for a radical change of the current economic system. Co-housing projects have typically small dwellings, but common spaces which should promote sharing and swapping practices (Cucca & Friesenecker, 2021). Common single-family houses “due to their usually spacious size and heavier environmental burdens compared to other types of dwellings should be banned

in the new development” (Xue et al., 2017, p. 15). Hence, socio-cultural change along with a contributing innovation is highlighted.

Also, in the health care sector which plays a significant part for human well-being, degrowth practices are introduced. This means, inter alia, a “stronger focus on preventive measures, [...] the promotion of healthy lifestyles, and the control of medical consumerism” (Missoni, 2015, p. 443). Thus, the degrowth approach impacts almost all areas of life and again emphasizes socio-cultural changes. Furthermore, sustainable (urban) planning including the compact city model not only plays a key role for green growth but also within the degrowth concept. Even though, a resource-saving lifestyle and more community-based facilities are emphasized (Xue, 2021). Dense cities “helping keep daily activities within the local area” (Xue, 2021, p. 9) and thus promote and relocalize the economy (economy area). To avoid further urban expansion, a limit of land use should be drawn. Furthermore, instead of supporting for instance electric cars, the road-space should be relocated “from car traffic to buses, pedestrians or cyclists” (Xue, 2021, p. 9) by implementing biking infrastructure, walkable neighborhoods and extensive public transport. In addition, the majority of the leftover car fleet should provide an enhanced environmental performance (Xue et al., 2017).

Next to practices in the housing, transport and land management sector, the doughnut economic concept (economic area) is highlighted as a framework in the degrowth literature and is suggested to be included in urban planning (Crowley, Marat-Mendes, Falanga, Henfrey, & Penha-Lopes, 2021). The framework is “shaped like a doughnut, that seek to replace the current endless growth” (Crowley et al., 2021, p. 87). It states that there is a safe space between a social foundation of human well-being and an ecological ceiling of planetary boundaries. The social foundation consists of 12 dimensions, inter alia, food security, health and energy. The ecological ceiling comprises nine dimensions like climate change, biodiversity loss and land conversion (environmental protection). Practices which are envisaged by doughnut economies are to embed the economy, to be designed distributive and regenerative, provide a dynamic complexity, “create” social adaptable humans and be growth agnostic (Crowley et al., 2021).

The actors of degrowth initiatives from the reviewed literature often emerge from multi-scaled, bottom-up community planning processes (Crowley et al., 2021; Xue, 2021). In detail, it is stated that the projects are realized by various associations, local institutions and grassroots activist as well as by public-private partnerships (Cucca & Friesenecker, 2021). These bottom-up actions are even seen as crucial, as “degrowth practices can hardly be implemented top-down” (Krähmer, 2020, p. 15).

7. Comparison

In this section, the green growth and degrowth concepts are compared to each other and advantages and points of criticism in urban areas are discussed as identified in the reviewed literature. Thus, it is asked

in which urban context green growth will be a superior organizing principle and in which one degrowth will be superior one.

7.1 Advantages and Disadvantages of Green Growth

Overall, the green growth approach “brought a strong boost to renewable energy industries and urban green energy projects” (J. S. Lee & Kim, 2016, p. 23) which may satisfy the criterion of *innovation embedding* of Wolfram’s evaluative framework (see section 3.1) in order to unfold sustainable transformative capacity for cities. In comparison with degrowth, green growth is probably the more politically realistic approach due to the maintained economic foundations. Therefore it gains more acceptance along the most market actors (Xue et al., 2017). For this reason, the criterion *system awareness* seems to be rather satisfied as probably for degrowth.

Even though, in the reviewed literature green growth also attracts criticism. Boston, as well as other cities and countries based their strategies primarily on the clean tech and energy sector. This approach “may exclude other types of green economy sector from developing” (Gibbs & O’Neill, 2014, p. 210) which may indicate a lack of the criteria *inclusive, multiform urban governance*. In addition, the green growth approach for the port of Los Angeles is criticized because only from the replacement of dirty infrastructure, there is no benefit for low-wage workers. Thus, social inequality is not addressed, and the criterion *empowered communities* is rather not compiled. Moreover, the trade growth has not been fulfilled at the port and in other places to the expected extent (De Lara, 2018; J. S. Lee & Kim, 2016). Furthermore, it is claimed that, technologies which reduce emission by being more environmentally friendly and energy and resource efficient at first sight, are often not emission neutral taken into account their whole production and consumption cycle (Næss et al., 2020).

In addition, the whole concept of unlimited economic growth is questioned by some authors of the reviewed literature. They claim, inter alia, that “the laws of thermodynamics and ecological science show that the consumption imperative [...] is not compatible with the finite space and resources of the planet” (Missoni, 2015, p. 440). Furthermore, the decoupling narrative emphasized by green growth is doubted. This could be considered as missing the criterion *foresight* provided by Wolfram. For example, this is because the outcome of sustainable (urban) planning in Oslo and Copenhagen show only relative, instead of absolute decoupling of growth from emission and the use of resources. Only due to externalization, decoupling appears to be successful in cities. This is because many initiatives only reduce production-based instead of consumption-based emission as growth is further emphasized and therefore consumption is more likely to increase (Krähmer, 2020; Xue, 2015). Moreover, the compact city model is an important project for green growth within sustainable planning. However, for example in Bangkok green spaces subsequently declined (Ali, Pumijumnong, & Cui, 2018). Furthermore, densification as a strategy limited to cities could lead to the result that inside the city compact dwellings

prevail but outside single-family houses or holiday homes are build (Krähmer, 2020; Xue et al., 2017). A further criticism is that urban dwellers indeed live less spacious but apart from that live an even more unsustainable lifestyle in contrast to rural or suburban residents (Xue, 2021). This phenomenon is reflected in rebound effects. The broad use of renewable energy could also lead to more spacious dwellings, or more energy consumption due to lower prices (Krähmer, 2020; Xue, 2015). In total, the environmental benefits of more energy and resource efficient production and consumption have been offset to some extent by increased consumption (Xue, 2021; Xue et al., 2017).

In the reviewed literature, green new deals as green growth strategies have also raised criticism. They argue that the main purpose “is not to properly respond to climate crisis and biodiversity restoration, but to provide opportunities for enterprises in the midst of climate crisis” (J. H. Lee & Woo, 2020, p. 12). Overall in planning documents, priority is given to growth rather than sustainability (Krähmer, 2020). Instead, a wider citizen participation is required in order to implement socially accepted strategies. Urban mega projects as in Seoul, could lead in the first place to more gentrification instead of an urban sustainable transition, because they are “lacking policy guidelines to tackle the socio-economic perspective of urban sustainability” (Schuetze & Chelleri, 2016, p. 10). This partly lacking collaboration could diminish the transformative capacity of green growth as it lacks *inclusive, multiform urban governance* which is highly required by Wolfram’s framework. Thus, a focus on small-scale, bottom-up redevelopment could be a more promising approach. However, the typical top-down approach of green growth could spread widely in a short time. Nevertheless, the strategies could become very unpopular for local governments and lack community involvement as well as flexibility (J. S. Lee & Kim, 2016). Hence, citizen participation is considered as a key element for urban sustainable transitions. Even though, also critique on bottom-up approaches occurred, as the active community participation is very resource and time intensive. For example, “low public awareness was an obstacle to develop and implement green growth projects” (J. S. Lee & Kim, 2016, p. 25) for South Korea’s energy transition.

7.2 Advantages and Disadvantages of Degrowth

Economic growth is still the focus for policy makers locally and globally, however GDP is not considered “necessarily beneficial for the well-being of people” (Kalaniemi et al., 2020, p. 378). On the contrary, a changed and healthier lifestyle does not seek for increased consumption but can lead to the reduction of emission. This may fulfill the criterion *experimentation with disruptive solutions* of Wolfram’s framework. For example, sustainable housing within the degrowth concept promotes sharing practices, which evidently reduce consumption practices, thus the environmental footprint (Cucca & Friesenecker, 2021). Furthermore, the main argument for downscaling production and consumption is that within the realms of the technically possible there is currently no ability to overcome the impact of growing output (Kalaniemi et al., 2020). Overall, the degrowth approach offers opportunities for

multiple and diverse projects and political actions (Missoni, 2015) and therefore responds to an *inclusive, multiform urban governance*. It is a more radical approach to tackle environmental damage with an embracing change of the established economic system and as such it is considered to “meet resistance from strong economic and political actors” (Xue et al., 2017, p. 19). This may also satisfy the criterion *experimentation with disruptive solutions* and will lead to *empowered communities*.

Criticism occurs for the degrowth approach as well. Krähmer (2020) argues that the degrowth concept partly does not go far enough in addressing transitions from the existing growth-oriented model on the one side. But on the other side, the approach is utopian as a world only consisting of eco-cities seems highly unlikely. Other challenges that occur for the degrowth approach are “[r]esisting mechanisms stem[ed] from the economic, social and cultural realms”(Xue et al., 2017, p. 18). In that sense, *system awareness* as one of the criteria for urban sustainable transitions could be missing as a consequence.

Furthermore, even in a degrowth economy, technological innovation is required “which is typically driven by economic activity and profit seeking” (Kalaniemi et al., 2020, p. 381). This poses a huge challenge for the concept. Moreover, downscaling is difficult for supporting the functioning of welfare states. Currently, welfare systems heavily rely on a strong economy due to their relation to taxes (Kalaniemi et al., 2020). Overall, the criteria for urban sustainable transition *innovation embedding* as well as *system awareness* could be harmed. Hence, support for (technological) innovation and a change of the whole welfare system is required.

For degrowth again, a lack of evidence occurs in some cases. For many grassroots experiments there is no clear or only limited evidence for their success in contributing to urban sustainable transitions yet (Poland et al., 2019). In addition, especially housing projects according to degrowth, “show high levels of elitism and thereby reproduce socio-spatial inequalities” (Cucca & Friesenecker, 2021, p. 2). Thus, even degrowth initiatives could lack the criterion *inclusive multiform urban governance*. Moreover, initiatives like urban gardening also represent challenges for urban sustainable transitions due to their take up of large areas. In that regard they could lead to low-dense cities with more traffic and higher levels of consumption. (Xue, 2021). That is why rebound effects can also play a role in degrowth scenarios (Xue et al., 2017) which will offset other measures.

Although the common bottom-up initiatives of degrowth appear to be superior in many fields, it is debatable whether “alternatives to the current ecosystem can be built solely on the promotion of change in individual behaviors and on initiatives at the community level” (Missoni, 2015, p. 446) or if additional support at the national and global level is needed. Although, it is still uncertain on how to do

so and whether the local initiatives can be scaled up to higher levels (Xue, 2021). Therefore, the criterion *transformative leadership* of Wolfram's framework is questionable for degrowth.

8. Conclusion

Climate change and the whole environmental degradation require radical action both now and in future. Thus, this thesis examined two concepts which could serve as approaches in order to tackle the associated enormous risks, the green growth and the degrowth concept. Urban areas play a decisive role in this context due to their huge ecological impact. That is why these are the places where in each case the actions should be undertaken. But within which approach? To respond to this question, this thesis seeks to answer the overarching question on how the concepts of green growth and degrowth compare as organizing principles for urban sustainable transitions. This was mainly done by conducting a systematic literature review of 19 documents.

The historical context of green growth and degrowth differs from one another. The concept green growth was mainly implemented top-down by international organization like the World Bank and the United Nations, or by nation states by means of climate strategies in the wake of the financial crisis and is also enshrined in economic recovery plans of the COVID-19 pandemic. Compared to this, degrowth roots in a social movement promoting a shift away from the growth paradigm towards a cultural and political change and was established and promoted by many scholars and grassroots activists. Important areas, practices and actors identified in a coding process for both concepts are in particular the economic area with various practices in order to reduce emission. On the one hand, green growth mostly promotes alternative forms of energy sources and enhanced energy and resource efficiency by aiming for a decoupled economy. By doing so, technological innovation is emphasized, for example in the form of smart grids or more efficient heating and cooling systems for housing. On the other hand, degrowth seek to downscale economic activities and thus, rather promote the use of low resources and carbon. This is done by promoting e.g., less travelling or compact dwellings and on the contrary to green growth, socio-cultural innovation is highlighted. While green growth is commonly promoted top-down, as mentioned above, degrowth initiatives often emerge from the civil society or local and regional authorities. To sum up, the concepts differ in their emergence, their focus on innovation and the level at which they operate.

Using Wolfram's evaluative framework, one can conclude that both, green growth and degrowth, possess the potential to promote urban sustainable transitions in several respects. The strong focus on technological solutions of the green growth approach may satisfy the required innovation embedding but could be at once a limitation to inclusive multiform urban governance. This is because this approach may exclude non-technical ideas and citizen initiatives. Furthermore, strategies promoting green growth in cities are often criticized of gaining in the first place solutions for further economic

growth instead of sustainability and thus lack to the criterion to empower communities. Despite non-existent evidence, green growth draws upon absolute decoupling of growth from emission and resource use and might therefore lack certain foresight, also with respect to potential rebound effects. In contrast, the radical change enshrined within degrowth could provide more capacity for urban transition in regard to satisfy Wolfram's criteria of inclusive multiform urban governance as it highly emphasizes citizen participation, often in form of grassroots experiments, and thus also aims for better experimentation with disruptive solutions and empowered communities. However, system awareness could be missing in this concept as it is partly considered as utopian and powerful actors could hinder a system change. Despite the targeted downscaling of production and consumption, technologies are needed to a certain extent and degrowth could lack innovation embedding. Although, city initiatives are considered as a promising strategy to tackle climate change, a linkage between the global and local level (transformative leadership) is required to be deemed satisfied to provide capacity for urban sustainable transitions. In total, it is very questionable whether degrowth could be scaled up globally.

Neither of the concepts green growth and degrowth are in every respect and context a superior principle for urban sustainable transition, but combining aspects of both could be promising. For example, more emphasis should be put on bottom-up initiatives with citizen involvement generally and, decoupling in some areas as well as downscaling in others could be promoted.

Of course, the findings of this thesis are limited. Due to time constraints and workload only literature found in one database was filtered and analyzed. This becomes apparent by looking at the places and years of publishing as well as the subject areas of the included documents. In total, not even close every place and area is covered in the review. Green growth or degrowth initiatives occurring, inter alia, on the African continent or in South America are not included and should be addressed in further research by taking more and additional literature into account. In addition, other frameworks evaluating urban sustainable transitions shall be applied as this thesis only builds on Wolfram's framework and other criteria may lead to other results. In addition, the codebook developed and used for this thesis must be tested by adding, adjusting or denying aspects of green growth and degrowth. Furthermore, to deepen the findings from above other research methods should be applied in further research.

Overall, the most important question has not yet been answered conclusively and remains for further research: *What is the most successful way to bring about an urban sustainable transition?*

9. References

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10. List of Documents for Systematic Literature Review

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