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Abstract

While sustainability has started to permeate the spatial planning practices of a number of municipalities, this somewhat superficial and ambiguous approach is grounded in an inherently unsustainable growth mindset. As cities attempt to transition towards climate neutrality and circularity, greenwashing and techno-optimist fixes threaten to supplant and undermine initially altruistic climate ambitions. Paradigmatic spatial planning is therefore in need of a new, non-growth based spatial planning model to earnestly, expeditiously and actually reimagine and realize a built environment configured around social and environmental well-being rather than economic profit. This report therefore positions the degrowth movement in relation both to transition theory and spatial planning practice to hypothesize what a transition to degrowth spatial planning would entail. To contextualize this theoretical pathway of change, the climate plans of a Danish municipality are evaluated in terms of degrowth spatial planning. This analysis culminates in a proposal for municipalities to refine and implement degrowth spatial planning to attain a socially just and ecologically sustainable future.

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1 Introduction

Half a century after the first murmurs of the impending climate crisis, the unfettered pursuit of infinite production and consumption parallels soaring anthropogenic emissions, rampant biodiversity loss, and detrimental land and ecosystem degradation (Almond et al., 2022; Eswaran et al., 2019; IPCC, 2022a). Although limiting global temperature rise to 1.5°C above pre-industrial levels would considerably curtail the consequences of the aforementioned crises, the window of opportunity to constrain catastrophe in line with the progressively quixotic Paris Agreement is promptly closing (IPCC, 2022a). Indeed, with two-thirds of planetary boundaries already exceeded and global warming predicted to warm the world by 2.8°C by the end of the century, the fatal future of collapse predicted by the prescient Limits to Growth report looks increasingly imminent (Meadows et al., 1972; Stockholm Resilience Centre, 2023; United Nations Environment Programme, 2022). This climate crisis is compounded by the simultaneous crises of deepening social and economic inequality, a fragile global financial system and an even more delicate pandemic-worn health system. In that respect, the contemporary era might best be characterized as an unprecedented moment of complex crises colliding and careening towards a devastating crescendo (Max-Neef, 2010). In the face of these looming existential threats, the time to act is now. Yet, ill-considered, premature actions might do more harm than good given the intricate, intersectional nature of the aforementioned crises. As these systemic crises have not magically materialized out of thin air, their underlying root cause(s) must be identified and assessed in order to determine how to rationally react and respond to these grave dilemmas. All in all, any action taken within the confines of a broken system can only serve as a short-term solution. So although the time for considerable, concerted action is running short, it is first imperative to discern and dismantle the reason why the planet now faces these calamitous crises.

A number of classic and contemporary authors articulate an unambiguous answer: the entrenched economic system of capitalism, in particular its current neoliberal incarnation, is the key culprit (Hickel, 2020; Klein, 2014). Although specifying the full culpability of capitalism would require its own comprehensive thesis, the logic of this particular socio-economic system is rather straightforward: value is placed on the continuous accumulation of assets for the sake of generating and acquiring ever more capital (Hickel, 2020). In other words, the ostensibly endless production and consumption of commodities is solely intended to make a profit above all other considerations. This emphasis on the lucrative exchange value of goods is in opposition to the majority of civilization's earlier economic systems in which goods were fabricated and traded according to their use value. Under capitalism, commodities need not have an explicit reason for existing. Their value lies instead in their potential to contribute to the quest for eternal, economic growth: generate

a profit, reinvest that revenue into increased production, make even more money than before and repeat this gluttonous process ad infinitum. From an ecological perspective, this pursuit of infinite production on a finite planet is simply and inherently unsustainable. If this contradiction is considered in terms of labor rights and equality, the exploitative reality of capitalism is as environmentally irrational as it is ethically untenable.

Although variable in its precise realization, capitalism has arguably become most successful in its obstinate persistence and homogenizing adaptability. Namely, capitalism will always find a way to endure, no matter the particular challenges or barriers to capital's accumulation that arise. The rise of neoliberalism (capitalism's contemporary edition) accordingly exemplifies how a capitalist economy will always find a 'fix' to keep growing. Neoliberalism[1] emerged as a response to the de-industrialization and stagflation[2] of the Global North in the late 1970s (Hickel, 2020). Advanced capitalist economies adopted expansionist policies in the wake of the Great Depression out of fear that markets would fail if left to themselves; after World War II, the Cold War raised the specter of growing support for communism and prompted Western governments to expand welfare states. This period of 'embedded liberalism' came to an end with weak growth, rising inflation, mounting deficits and declining confidence in the U.S. dollar. Despite the various benefits of investments in education and labor, these policies were dismantled and replaced with neoliberal policies[3]. Social objectives were thereby discarded in favor of capitalism's insatiable growth ambition. Since its establishment, neoliberalism has thoroughly saturated society so as to make itself inextricably essential for our current socio-economic and political institutions to function. In that vein, Hickel stoically details:

> If growth stops, companies go bust, governments struggle to fund social services, people lose their jobs, poverty rises, and states become politically vulnerable. Under capitalism, growth is not just an optional feature of human social organisation—it's an *imperative* to which all are hostage. If the economy doesn't grow, everything falls apart (Hickel, 2020, p. 95).

The inability to substantively act on climate change (or address any of the world's crises for that matter) is thus clear: conceding that there are limits to growth on a finite planet fundamentally conflicts with the sovereign ideology of neoliberal capitalism. This growth imperative thus means that any initiative to mitigate and adapt to climate change must comply with neoliberalism's contradictory rationale.

1.1 The Green Growth Illusion

The mainstream solutions proposed to solve the climate crisis, most notably sustainable development and green growth, merely represent a continuation of a broken system and follow the same delusional logic that has led to the current state of global emergency.

[1] Neoliberal ideology maintains that collectivist, inflationary, and protectionist pressures caused by government intervention hinder the potential performance of the economy.

[2] Stagflation refers to the combination of stagnant growth, or a recession, and high inflation.

[3] To remedy the encroachment of the public sector's oversight, neoliberal policies proffer a free market optimized through deregulation, privatization, globalization, and the shrinking of government's role - including reduced welfare provision.

Like neoliberalism in the 1980s, the widespread acceptance and adoption of sustainable development[4] policies serve as just another in the long line of capitalist fixes. In the case of sustainable development (the foundational strategy underpinning green growth[5] economics), this organizing principle arose to pacify the burgeoning environmentalist movement and its rallying cry concerning the limits to growth (Krähmer, 2021). Despite the altruistic, environmental intentions that preceded the rise of these philosophies, these now normalized strategies for ecological modernization constitute greenwashed manifestations of capitalist ideology. Indeed, green growth (hereafter used interchangeably with sustainable development) avows that both the neoliberal socio-economic system and the consumptive, carbon-heavy lifestyles it encourages can and should be maintained or even cultivated. According to these approaches, the discrepancy between economic growth and ecological sustainability can be remedied through innovation and technology—with some simple behavioral changes sprinkled in. The allure of this concept (with its agreeable insinuation of guilt-free economic growth, job creation, and nominal lifestyle sacrifices all neatly harmonized with ecological sustainability) is confirmed by the growing popularity of various Green New Deals. While more progressive versions of this political agenda possess latent potential to revolutionize the economy, the majority of these 'greening' political proposals uphold and reinforce the neoliberal imperative of capital accumulation and shifting social and environmental costs[6] onto marginalized communities (Conde et al., 2022; Dunlap & Laratte, 2022). However, the techno-optimist belief underpinning the green growth foundation of Green New Deals is a fallacy (Conde et al., 2022; Hickel, 2020).

Green growth hinges on the assumption that economic growth can be (relatively rapidly) decoupled from resource use and anthropogenic carbon emissions through improvements in efficiency, the widespread implementation of renewable energies and low-carbon technology, and the infusion of circularity into the economy. However, empirical analyses substantiate both the lack of absolute decoupling[7] on a global scale and the inability of observed decoupling rates to reduce resource use and emissions to a sufficient scale (Haberl et al., 2020; Hickel, 2020; Krähmer, 2021; Parrique et al., 2019). While evidence of relative decoupling[8] is often touted by green growth proposals, producing more with less impact (as a result of efficiency improvements) is not enough to reduce total ecological impact within safe planetary limits (Hickel, 2020; Krähmer, 2021). If current economic growth rates are expected to be genuinely made compatible with articulated climate goals, efficiency improvements must be invented at a rate ten times faster each year than currently—an empirically quixotic endeavor (Wächter, 2013). As efficiency improvements are bounded by physical limits, decoupling exponential growth from material and energy use is impossible to permanently achieve. In fact, rebound effects (caused by efficiency improvements driving

[4]According to the Brundtland Report (1987), sustainable development is defined as "meeting the needs of the present without compromising the ability of future generations to meet their own needs" (p.41).

[5]The Organisation for Economic Co-operation and Development (OECD) describes green growth as "fostering economic growth and development while ensuring that natural assets continue to provide the resources and environmental services on which our well-being relies" (2011, p.9).

[6]Conde et al. clarify: "Cost-shifting occurs whenever (economic) agents generate social costs (financial or otherwise) that affect, whether directly or indirectly, third persons or the environment. Unless forced, economic agents that generate such costs generally do nothing to avoid or minimise them" (2022, p. 22).

[7]Absolute decoupling implies that economic growth is entirely independent from resource impacts; environmental pressures stabilize or decrease while the economy expands.

[8]Relative decoupling indicates that the economy is growing faster than the rate of resource impacts. However, environmental degradation may still be increasing.

the price of a good or service lower) generate increased demand and thereby result in heightened consumption (Hickel, 2020). Thus, the apparent success of relative decoupling (itself a temporary circumstance) often belies processes of externalization (or the transfer of the environmental impacts of resource extraction and industrial production to other, often marginalized, populations) and is regardless negated if the total volume of economic throughput continues to increase (Parrique et al., 2019). In short, "the notion that continuous efficiency improvements will somehow magically lead to absolute decoupling is empirically and theoretically baseless" (Hickel, 2020, p. 155).

Furthermore, the enthusiasm for renewable and low-carbon infrastructures as perfect mechanisms for powering the green growth transition glosses over their potentially substantial ecological and social costs (Dunlap & Laratte, 2022). In reality, fully substituting fossil fuels with 'clean' energy sources would entail a staggering increase in material extraction for the production of solar and wind utilities, electronic devices, and digital infrastructure. And if the economy continues to indulgently increase as neoliberalism would dictate, the damaging, exploitative land-use practices often associated with mining must accordingly, exponentially grow. The latest Intergovernmental Panel on Climate Change (IPCC) report denotes that the potential advantages of digitalization and technological innovation in terms of climate change mitigation "can be reduced or counterbalanced by growth in demand for goods and services" (2023, pp. 19–20). The accelerating extraction of raw resources (which often occurs in regions of the Global South where labor and environmental regulations are weaker) implies significant environmental degradation in the form of soil, air, water and body toxification, the apathetic displacement of communities or their subjugation to disastrous living and labor conditions, the destruction of cultural heritage sites, human rights violations, and conflict along political, ethnic, or racial lines. As Dunlap & Laratte summarize: "replacing a rapacious fossil-fuel industry with an equally predatory renewables industry is not in line with the principles of global justice" (2022, p. 2). Regardless of whether or not extractive industries are obliged to adhere to ethical and ecological standards, shifting to renewable energy will not be achieved rapidly enough to limit global warming to 1.5 or 2°C if the global economy's existing rates of growth persist (Hickel, 2020). And while the implementation of renewable energy sources may serve to address anthropogenic carbon emissions, it fails to address attendant ecological issues of deforestation, overfishing, soil degradation, and biodiversity loss—not to mention systemic health, socio-economic, or political concerns. A green growth economy fixated on infinite expansion yet fueled by 'clean' energy does not address the world's multi-faceted crises and will remain susceptible to the threat of catastrophic ecological collapse.

Of course, if green growth retains little potential for actualizing environmental, economic, and social sustainability, the operative question turns to what ideological directive could substantively address the globe's crises. The swelling support standardizing green growth obscures a number of theories embedded within the green economy discourse which represent promising theoretical and practical alternatives to the prevailing green growth narrative. The comprehensive concept of degrowth in particular presents "an ecologically coherent solution to a multi-faceted crisis" (Hickel, 2020, p. 208). Degrowth (further elucidated in Section 2.1.2) criticizes the presumably perpetual expansion of the global economy and challenges the techno-optimist hypothesis that social and ecological well-

being can be attained while maintaining this exponential growth. Instead, this political and social movement posits that a paradigmatic revolution encompassing significant reductions in production and consumption levels is imperative to transition to a sustainable socio-economic system that is not solely infatuated with one metric of financial growth. Degrowth presents an alternative model of economic organization based around principles of participatory democracy, voluntary simplicity, and equality in order to prioritize genuine and long-term ecological sustainability and social justice rather than maximize profits. Although still a rather niche proposal for radical societal re-organization, degrowth is garnering more institutional and academic recognition. Most notably, prominent international organizations that address the urgent challenges of the climate crisis have recently underscored the value of further analyzing degrowth policies as a viable alternative to growth-oriented development (IPCC, 2022b; Khmara & Kronenberg, 2022). The IPCC's sixth assessment report highlights empirical evidence which suggests stabilizing the climate below 2°C is only attainable through a degrowth approach (IPCC, 2022b). Although degrowth provides a promising climate solution, it also requires a revolutionary, redistributive paradigm shift for this degrowth transition to be initiated and actualized. Successfully shifting to a degrowth trajectory necessitates the formulation of a comprehensive and concrete portrayal of a degrowth society, yet clear scenarios and explicit proposals that illustrate how this subversive transition will occur and how a future degrowth society will function are largely lacking.

1.2 Spatial Planning

The interdisciplinary realm of spatial planning provides ample opportunity for combining visions of a degrowth future based on ecologically-oriented development with tangible practices and policies to materialize that sustainable scenario. However, the ingrained neoliberal logic underlying contemporary spatial planning must be dismantled before the practice can transition towards predominantly cultivating and sustaining environmental and social well-being. Just as virtually every other facet of the prevailing socio-economic system has proven susceptible to the hegemonic capitalist-growth mentality, neoliberal principles have inundated planning since its emergence in the 1980s and continue to comfortably envelop conventional planning practice within the growth-oriented paradigm (Lamker & Dieckhoff, 2022; Lehtinen, 2018; Xue, 2022a). Planning's insistence on growth stems from a circular argumentation: market-led urban development stimulates economic growth, which in turn induces population growth, rising employment rates, as well as diversified and expanded services and goods; planning should therefore facilitate growth-oriented development and simultaneously direct that development in order to advance community benefits (Lehtinen, 2018; Rydin, 2022). Normative planning practices thus justify the pursuit of market profitability as necessary to ameliorate environmental and social conditions; the fundamental objective of planning policies is therefore to align ambitions for economic growth with socio-ecological improvements. In reality, the prioritization of growth is often pursued at the expense of other social and ecological agendas (Forestier & Kim, 2020). Illustrating the paradox of green growth, profit is perceived as a prerequisite for the future implementation of sustainable planning, rather than addressing the adverse social and environmental impacts of planning from the outset. Consequently, planning reinforces and reaffirms the dominant ubiquity of

neoliberalism through maintaining the optimal environment and mechanisms for economic growth to flourish (Lehtinen, 2018; Savini et al., 2022; Xue, 2022a). The unquestioned interdependence of economic growth and planning has become so deeply entrenched that it is essentially indisputable (Lehtinen, 2018).

This uncritical compliance is likely due, at least in part, to the prevalent pervasiveness of green growth narratives in planning documents, the absence of imaginary planning tools for envisioning alternative futures, and the limited representation of non-economically driven actors in development plans (Ruiz-Alejos & Prats, 2022). Indeed, scholars underscore the palpable paucity of analytical models investigating limits to growth for the planning discipline (Khmara & Kronenberg, 2022) and planning's proclivity to strengthen the green growth discourse (Mete, 2022). Planning has successfully devised and deployed a plethora of instruments across local, regional and national scales to spatialize neoliberalism: urban city development has been commodified into competitive branding competitions for heightened reputation, investments, and growth production; the commons have been privatized to such an extent that public space is an ephemeral phenomenon; and biophilic sustainability has become a marketable asset for spatial growth accumulation (Lehtinen, 2018; Ruiz-Alejos & Prats, 2022). In that respect, many cities are developing and executing (albeit at a lethargic, uneven pace) sustainability initiatives and climate plans, such as C40 Cities[9], in line with green growth ideology (IPCC, 2022a). These plans generally focus on mitigation measures rather than adaptation strategies, thus overlooking and potentially exacerbating social inequalities already aggravated by the effects of climate change (IPCC, 2022a). In spite of these ecological endeavors, sustainability assessed at a regional and global scale indicates a lack of progress towards sufficient climate mitigation while disparate wealth concentration and environmental degradation continue to increase (Xue, 2018). Xue (2018) contends that these "failures to deliver urban sustainability goals stem from a reluctance for spatial planning to challenge the hegemonic 'growth ideology' in contemporary socio-economic political domains" (p. 1). Thus, a crossroad is reached: spatial planning is debilitatingly averse to opposing neoliberalism's omnipresent authority, but this growth-oriented paradigm undermines the efficacy of planning in dealing with present socio-ecological challenges. While mainstream planning discourse and practice has yet to challenge the entrenched growth mentality or verbalize the necessity of lowering urban consumption (in other words, seriously consider degrowth), dissociating planning from the capitalist-growth regime is an essential step to engender an environmentally and socially just society (Lehtinen, 2018; Ruiz-Alejos & Prats, 2022; Savini et al., 2022).

Although degrowth theorizations and practices in the spatial planning domain remain niche, there is a widening collection of scholarly literature interlacing degrowth and spatial planning in recent years (Ferreira & von Schönfeld, 2020; Khmara & Kronenberg, 2022; Lehtinen, 2018; Mazarro et al., 2023; Ruiz-Alejos & Prats, 2022; Savini et al., 2022; Wächter, 2013; Xue, 2014, 2022a). To date, this work has predominantly concentrated on exemplifying practices of degrowth through specific case studies rather than broadly visualizing and stipulating the role of degrowth principles and initiatives for spatial planning (Xue, 2022a). Nevertheless, Lamker & Dieckhoff (2022) sanguinely foresee that

[9]C40 Cities is a network of metropoles across the globe committed to halving their carbon emissions by 2030, with the express ambition to limit global warming to 1.5°C while developing resilient communities" (C40 Cities, 2023).

"a discursive momentum is building for developing planning roles and practices that are not based on an institutionalised growth paradigm. It is becoming conceivable that planners will emerge for whom growth is neither a starting point nor a goal" (p. 189). Of course, defining spatial planning separately from the hegemonic capitalist-growth regime is a necessary step to manifest this emancipated planning (and will be further elucidated in Section 3.1.2). Academics and activists working at the intersection of spatial planning, urban studies, and degrowth differ in their delineation of degrowth spatial planning in a reflection of their particular backgrounds and contextual grounding. Although allowing for individual idiosyncrasies, there are a number of common themes which characterize the degrowth spatial planning discourse (detailed in Section 3.1.2). Generally, degrowth as applied to spatial planning confronts the growth-imperative logic of contemporary urban development and instead entails development centered around reducing the ecological footprint of cities, promoting values of communal sharing and circular reuse, and espousing social justice through actively addressing socio-spatial inequalities (Xue, 2022a). In essence, degrowth spatial planning seeks to radically reconfigure urban metabolisms and forms in a way that fosters social well-being and ecological sustainability.

1.3 Research Questions

With the understanding that previous and current iterations of spatial planning are insufficient to address the multifaceted crises the planet currently faces, the following questions for implementing degrowth spatial planning in its stead arise. First and foremost, the most pressing consideration for realizing degrowth concerns how societies can fundamentally transition towards a degrowth spatial planning. In that vein, a worthwhile avenue of research is to investigate transition theory itself and how transition ideology might support the degrowth agenda towards planning for degrowth. In order to clarify what society is transitioning towards, degrowth spatial planning must itself be distinctly defined with unambiguous values and objectives. This definition might incorporate the strengths and shortcomings of existing examples of relevant spatial degrowth projects and practices. Lessons from these initiatives add to a comprehensive understanding and strategic vision for a viable degrowth spatial planning. Although the aforementioned questions may be broadly evaluated, they must be locally framed and applied to understand and actualize degrowth in a given geographical, temporal, and political context. Rather than mandate one uniform archetype for degrowth urban development, degrowth planning must allow for contextual nuances to help form localized visions for attainable degrowth models of collective organization and living (Savini et al., 2022).

In exploring the implementation of degrowth principles in spatial planning, Denmark, in particular, has emerged as a potential role model for degrowth spatial planning due to its commitment to planning for sustainability with Copenhagen as the crown jewel, or the self-titled Capital of Sustainable Development (Krähmer, 2021; Xue, 2018). Danish municipalities have ostensibly embraced a holistic approach to spatial planning, focusing on the well-being of their citizens in addition to reducing the ecological footprint of its built environments. Yet, Denmark has not evaded the influence of the neoliberal capitalist-growth regime (with the accompanying implication of misguided green growth strategies), despite its reputation as an egalitarian state. Although Danish spatial planning in its

modern-day inception after WWII was initially intended to cultivate balanced and equal economic development, economic stagnation and recession towards the twilight of the twentieth century led to a gradual neoliberalization of this preceding welfarist approach (Xue, 2018). In line with much of the Global North, this neoliberalization marked the increasing evolution of Danish spatial planning into an instrument for stimulating economic growth, strengthening Denmark's urban competitiveness, and "secure its position in the global economy. Today, Denmark's spatial planning approach (detailed in Section 3.2.1) reflects neoliberal values as "the framing of planning at the national level steered by the growth and competitiveness rationale is seen as necessary in order to meet the demands set forth by globalisation and to secure Denmark's future prosperity" (Xue, 2018, p. 5). Nonetheless, Denmark has distinguished itself on the global stage with its current trajectory to implement sweeping Climate Action Plans aligned with the Paris Agreement in nearly all of its municipalities (Realdania, 2023). As achieving these ambitions is highly unlikely under the incumbent green growth paradigm, Danish planning must undergo quite a transformation to achieve articulated objectives of carbon neutrality. Given its past welfarist tradition and its lofty sustainability ambitions, Denmark provides fertile soil for a degrowth transition.

Thus, this thesis aims to investigate and exemplify degrowth spatial planning in Danish municipalities. In contextualizing degrowth spatial planning to Denmark, this thesis converges on four fundamental inquiries. First, the cultural mentality and political landscape of Danish municipalities must be examined, especially in relation to their receptivity to degrowth. With the current zeitgeist established, Danish municipalities may next be investigated to determine what principles and/or practices conducive to degrowth already exist in spatial planning. As policies require enabling actors for implementation, the subsequent query concerns who the relevant stakeholders are for discussing and implementing degrowth in Danish spatial planning. Following these underlying inquests, the penultimate consideration for integrating degrowth into Danish spatial planning regards concrete actions that might be taken to transition to degrowth Danish municipalities.

With these four questions answered, this thesis ultimately aims to ascertain how a transition to degrowth may actually be realized. In effect, *How can municipalities divorce themselves from an insatiable growth mentality and transition to a spatial planning practice based on degrowth principles*?

Method 2

In order to comprehensively contend with the underlying queries evoked in the introduction, this report is first grounded in academic theories and an analytical framework which construct the critical lens of this paper. With this particular perspective established, the subsequent research design delineates the methodological organization and procedural outline of this report. In accordance with this research structure, the methodology concludes with an explication of the four methods employed for accumulating and analyzing pertinent knowledge and data.

2.1 Conceptual Framework

This theoretical armature forms the foundational lens of this report. In that respect, the following concepts within the socio-economic circularity discourse frame the particular perception and evaluation of sustainability and urban development adopted and elucidated within the bounds of this thesis. The comprehensive circularity discourse encircles degrowth, which serves as the theoretical and conceptual foundation of this thesis. Rooted in this degrowth perspective, steady-state economics and planetary boundaries are subsequently defined.

2.1.1 Circularity Discourse

Although lacking a fixed, universal definition, a circular economy denotes a regenerative economic system that aims to minimize waste and maximize the efficient use of resources in a restorative, resilient cycle (Ellen MacArthur Foundation, 2023). The characteristic ambitions of a circular economy – eliminate waste and pollution, circulate products and materials (at their highest value), and regenerate nature – possess the latent potential to alleviate resource scarcity, biochemical flow disruption, and anthropogenic carbon emissions while concurrently restoring and enhancing local and regional economies (Ellen MacArthur Foundation, 2023; Friant et al., 2020). While this relatively novel theory has exploded in visibility in both public and private spheres, the breadth of this popular discourse and the absence of a single, sanctioned definition induces varying interpretations and incongruities concerning the comprehension, ambition, implementation, and systemic validity of the circular economy concept (Friant et al., 2020).

Although the circular economy is frequently affiliated with the concept of green growth, in reality, there is no established economic model or social theory underpinning the concept and it therefore encompasses a plethora of circularity narratives and visions (Friant et al., 2020; Khmara & Kronenberg, 2022). Indeed, Friant et al. (2020) identify a manifold typology of circularity discourses organized along social, technological,

political and ecological dimensions and divided into reformist, technocentric, fortress, and transformational strands. This plurality underscores the complex ecological, social, and political implications of circularity and the necessity of grounding the expansive concept of the circular economy in more explicit theory. Degrowth – the main conceptual backbone both of this analytical framework and the thesis in general – falls within the circularity discourse as a transformational proposal for economic downshifting and abundant sufficiency.

2.1.2 Degrowth

At a glance, *de*growth is positioned in unequivocal opposition to growth, but this opposition extends to other characteristic consequences of the capitalist-growth regime which obstruct ecological and social well-being. At its core, degrowth is an academic and activist demand for ecological and social justice. Hickel (2020) resolutely reinforces this expansive definition:

> [Degrowth] stands for de-colonisation, of both lands and peoples and even our minds. It stands for the de-enclosure of commons, the de-commodification of public goods, and the de-intensification of work and life. It stands for de-thingification of humans and nature, and the de-escalation of ecological crisis. Degrowth begins as a process of taking less. But in the end it opens up whole vistas of possibility. It moves us from scarcity to abundance, from extraction to regeneration, from dominion to reciprocity, and from loneliness and separation to connection with a world that's fizzing with life (pp. 289-290).

Thus, although degrowth is most immediately visible as a criticism of the prevailing capitalist-growth regime and a rallying call for radical change, it encompasses a variety of interpretations, ideas, and initiatives. Ecological economists promote the environmental and social benefits of a steady-state economy (Farley, 2014; Schumacher, 1977); back-to-the-landers emphasize the power implicit in voluntary simplicity (Illich, 1973; Schumacher, 1973); feminist decolonial scholars advocate for global intragenerational justice that obstinately opposes the reproduction of (neo-)colonial narratives (Abazeri, 2022; Dengler & Lang, 2022; Dengler & Seebacher, 2019); and environmental justice activists connect degrowth to the adjacent environmental justice movement in calling for multidimensional justice in an ecologically stable world (Akbulut et al., 2019; Scheidel & Schaffartzik, 2019). As a result, degrowth positions itself as an open-minded and transdisciplinary confluence point for debate on how to radically reimagine contemporary society in the face of multifaceted, existential crises.

Notwithstanding this veritable cornucopia of influences, the theoretical and philosophical underpinnings of degrowth may be distilled around a handful of fundamental tenets. In that vein, Demaria et al. (2013) identify six theoretical sources of degrowth illustrated in Figure 2.1: *ecological economics*, *bioeconomics*, anthropological and cultural *critiques of development*, *re-democratizing politics*, the *social and environmental justice movements*, and the *economics of happiness*.

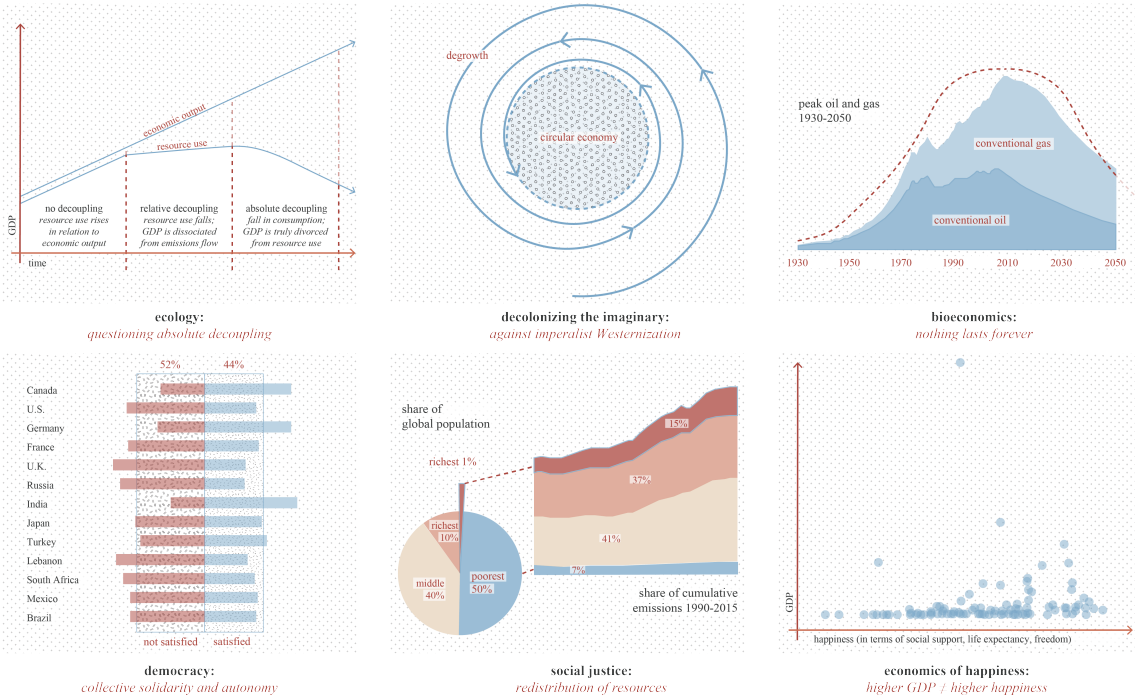

Figure 2.1. Six sources of degrowth visualized. Source: Deeg, 2021.

In opposition to the illusory premise of green growth, degrowth draws on *ecological economics* for its insights into the biophysical limits on economic growth and its critique of mainstream views that technology can solve any resource constraint problems. Ecological economics also provide empirical evidence of the lack of absolute decoupling on a necessary global scale (Demaria et al., 2013). In a like manner, degrowth employs a *bioeconomics* argument that down-scaling economic production is necessary given the inevitable exhaustion of resources and degradation of materials. Degrowth adopts a *decolonialization approach* for composing new degrowth imaginaries in contrast to the historic and ongoing colonialization and materialistic Westernization of development and culture. Hand in hand with decolonizing future abstractions of society, degrowth intends to implement a more *participatory, direct democracy* (although there are discrepancies between reformist and radical visions) by repoliticizing public debate and infusing political institutions and systems with values of collective solidarity, autonomy, and justice. This political reform under degrowth thus extends to *social justice* (and to a lesser extent thus far, environmental justice); reducing rampant inequalities and poverty through redistributive, egalitarian measures constitutes a cornerstone of degrowth. Policies aimed at allocating and attaining structural equality are further legitimized by *studies of happiness* which imply that a less consumptive lifestyle with more free time for leisure, community, and rewarding pursuits (as championed by degrowth) will lead to greater long-term well-being and prosperity than increases in material wealth. While potentially daunting given this plethora of interdisciplinary elements, the multidimensional discourse coalescing around the degrowth movement mirrors the disconcerting complexity of the world's concomitant climate, socio-economic, health, and political crises.

In opposition to this forbidding future, the ultimate objective of degrowth scholars, activists, and proponents hinges on a shared aspiration to manifest a just, participatory,

and ecologically sustainable society ("Degrowth Declaration of the Paris 2008 Conference", 2010). This intersectional, socio-economic transformation necessitates prioritizing and abiding by ecological limits (or planetary boundaries). This requires a redistributive revision of the contemporary political and cultural zeitgeist by ceasing continual commodification while simultaneously down-scaling exorbitant production and resource consumption. Yet, the degrowth movement is somewhat divided in proposing both a localized, bottom-up approach and a premeditated reform of governmental and political institutions to negate the capitalist-growth imperative. Nonetheless, degrowth proposals (presented in-depth in Appendix A) predominantly promote national top-down strategies to actualize a socially and ecologically sustainable society by reducing the environmental impact of human activities, redistributing income and wealth, and cultivating a convivial, collective society (Cosme et al., 2017).

In a sense, degrowth is nothing new: degrowth-oriented policies like investing in robust social welfare systems, subsidizing local production and consumption, promoting and protecting labor rights, progressively distributing national income, and even organizing economies around ecological regeneration have all been developed and implemented in the past[1] (Hickel, 2020). Indeed, degrowth draws on existing, alternative visions of well-being outside the hegemonic capitalist-growth imperative and largely informed by Indigenous perspectives such as '*buen vivir*' in Latin America (Gudynas, 2014; Thomson, 2011), '*ubuntu*' in Sub-Saharan Africa (Ramose, 2014; Terblanché-Greeff, 2019) and 'ecological *Swaraj*' in India (Kothari et al., 2014). In a similar vein, the following concepts defined in this analytical framework exist in their own right within the sustainability discourse, but they are explicitly defined in relation to degrowth within the scope of this report.

2.1.3 Steady-State Economy

Positioned in diametric opposition to the current socio-economic system, the degrowth movement naturally espouses an alternate economic model to neoliberal capitalism: that of steady-state economics. Just like degrowth, steady-state economics is based on the premise that infinite economic growth in a finite world is intrinsically impossible and that the ecologically and socially correct role of the economy should be to efficiently sustain and equitably allocate sufficient wealth rather than maximize production and profit (Schumacher, 1977). To that end, a steady-state economy can be conceived as the ultimate socio-economic objective of degrowth (Farley, 2014).

Instead of depending on continuous growth for stability, a steady-state economy aims to achieve balance between human well-being and ecological health through the prudent use of natural resources and the implementation of sustainable consumption and production patterns. In essence, a steady-state economy represents a tenable socio-economic model in which the flow of material and energy remains within the carrying capacity of the Earth's ecosystems. According to Farley (2014), a steady-state economy in harmony with the living world entails the five following principles:

1. Renewable resource extraction does not surpass regeneration rates.

[1] This is particularly the case in the post-colonial decades of the mid-twentieth century in the Global South before neoliberalization – teaming up with neo-colonialization – dismantled these programs (Hickel, 2020).

2. Waste emissions do not exceed waste absorption capacity.
3. Consumption of non-renewable resources must be limited.
4. Neither resource extraction nor waste emissions jeopardize critical ecosystem functions.
5. Human populations must remain relatively fixed[2].

These five principles can be distilled to the binary standard to "never extract more than ecosystems can regenerate" and "never waste or pollute more than ecosystems can safely absorb" (Hickel, 2020, p. 246). In practical terms, achieving a steady-state economy undoubtedly encompasses definite limits on resource use and waste. In concert with degrowth policies, this transformation will likely necessitate the implementation of measures such as ecological taxation, resource and pollution caps, and the promotion of sustainable technologies and practices. This reorientation of economic policies and systems also requires a fundamental shift in socio-cultural values and standards.

With critical planetary boundaries (elucidated below) surpassed and current rates of throughput[3] exceeding the limits compatible with a steady-state economy, "humanity is no longer living off the regenerative capacity of the global ecosystem, but is actively reducing natural capital stocks and future capacity to sustain economic activity" (Farley, 2014, p. 51). At a certain point, since the global economy will be compelled to degrow to a steady state, the operative question is whether this transition is voluntary or coercive. Nevertheless, the inevitability of a steady-state economy is, in fact, advantageous as a balanced throughput allows society to focus on ecological, cultural, and social progress, rather than amassing more material wealth at the expense of the environment.

2.1.4 Planetary Boundaries

The planetary boundary concept was developed to definitively delineate and quantify "a safe operating space for humanity based on the intrinsic biophysical processes that regulate the stability of the Earth system" (Steffen et al., 2015, p. 1). Following widespread critical engagement, the framework's initial configuration in 2009 has been continually refined and expanded to reflect the latest developments in ongoing scientific research, the importance of interactions across boundaries, and the significance of regional variability in underlying processes (Steffen et al., 2015; Stockholm Resilience Centre, 2023).

The current planetary boundary framework (illustrated in Figure 2.2) denotes limits for nine potentially destabilizing processes: *climate change*, *freshwater change* (in terms of freshwater and green water – water used by plants), *stratospheric ozone depletion*, *atmospheric aerosol loading* (effect on regional ocean-atmosphere circulation), *ocean acidification*, *biogeochemical flows* (terrestrial and marine biological carbon sinks), *novel entities* (chemical pollution), *land-system change*, and *biosphere integrity* (rate of biodiversity loss in terms of genetic and functional diversity) (Stockholm Resilience Centre, 2023). Crucially, this visual emphasizes the dire condition of planetary limits: six of the nine boundaries have already been breached to varying degrees. The *atmospheric*

[2]The debate concerning this controversial proposition falls outside the scope of this report (for a critical overview, see Søyland, 2021).

[3]In this context, "throughput is defined as the extraction of raw materials from nature and their return to nature as waste" (Farley, 2014, p. 49).

aerosol loading boundary and the subdivision of functional biodiversity under the *biosphere integrity* boundary have yet to be quantified, meaning that even more ecological limits might already be exceeded.

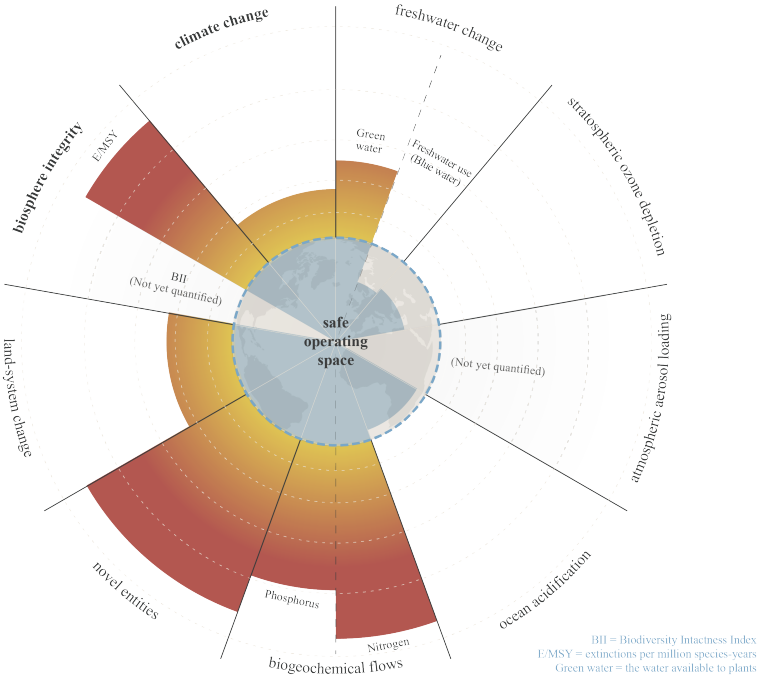

Figure 2.2. Current state of the planetary boundaries. Source: adapted from Stockholm Resilience Centre, 2023.

Each boundary encompasses its own areas of concern and potential tipping points, but two phenomena, namely *climate change* and *biosphere integrity* diverge in their overarching global scale, their ability to regulate the other boundaries, and their consequential capability to shift the Earth system out of its current state (Steffen et al., 2015). This distinction therefore insinuates a two-level hierarchy of the planetary boundaries in which *climate change* and *biosphere integrity* encompass the physical and biological conditions within which the other boundaries operate and regulate the planet's living systems. While transgressing those two boundaries might occasion more immediate catastrophe, surpassing any of these ecological thresholds catapults society into a precarious zone where tipping points may be triggered, potentially leading to irrevocable systemic collapse (Hickel, 2020).

To stay within the biophysical limits of a stable Earth system, the world must transition towards a sustainable and equitable future where resource consumption and extractive production are kept within the Earth's natural capacity to absorb and regenerate (Steffen et al., 2015). The planetary boundary concept contributes to this sustainable transformation by providing a scientific framework to analyze and ascertain the limits within which human activity can safely operate without causing irreparable harm to the Earth's natural systems and the essential services they provide.

2.2 Theoretical Framework

In alignment with the underpinning analytical framework, the theories utilized in this report facilitate and characterize the apprehension and application of specific terminologies, concepts, and practices that collectively converge to address the principal research query. In that vein, this report incorporates transition theory, touching upon strategic niche management, multi-level perspective, and transition management, in order to understand the complex, seemingly capricious nature of societal transformations. The theory of science, critical realism, is then articulated to characterize the philosophical perspective of this report.

2.2.1 Transition Theory

Although the phenomenon of transitions has been scrutinized throughout a plethora of disciplines (notably within evolutionary economics in the form of innovation, science, and technology studies) transition theory has itself metamorphosed into an emerging field on its own right (Loorbach, 2007; Markard et al., 2012). Transition theory, a research agenda that has been gaining steam academically and politically since the turn of the century, arose to determine how a societal transition from the present global trajectory of carbon lock-in and path dependent climate catastrophe[4] to more ecologically and socially tenable levels of production and consumption might be articulated and executed (Markard et al., 2012). Transition theory thus dissects the processes of change in which one normative socio-technical system[5] is reconstructed along technological, material, organizational, institutional, political, economic, and socio-cultural lines (Markard et al., 2012). While the complex magnitude of these multi-dimensional, interdisciplinary transitions typically manifest in incremental change over generations, some (more partial) processes of innovation and change can almost instantly proliferate and result in rapid, radical reformation (Markard et al., 2012).

Within transition theory, a number of frameworks have garnered particular popularity for their systemic, comprehensive consideration of socio-technical transitions. Despite variations, two key concepts connect these theoretical suppositions: that of the *socio-technical regime* and *niches*. The concept of the *socio-technical regime* indicates both that technological processes are inextricably intertwined with social practices and that there is one hegemonic zeitgeist that dominates global politics, economics, and culture. In other words, the ingrained socio-technical regime "imposes a logic and direction for incremental socio-technical change along established pathways of development" (Markard et al., 2012, p. 957). Outside the normalizing pressure and appropriation of the socio-technical regime, *niches* are conceptualized as smaller markets or domains which facilitate the development of radical innovations and novel technologies (Gibbs & O'Neill, 2017; Markard et al., 2012). Niches materialize as shifts or disruptions in the broader socio-technical environment (posed by challenges like the climate crisis) generate moments of friction and tension

[4]Here, path dependence and lock-in refer to the entrenched inertia created by established technological, regulatory, institutional, political, and cultural structures which impede efforts to change carbon-intensive socio-technical systems in response to the climate crisis.

[5]A socio-technical system is an amalgamation of various, interrelated actors (both individual and collective), institutions (structures which dictate cultural and regulatory norms), material artifacts and knowledge (Markard et al., 2012).

in which niche experiments can evolve, amass visibility within mainstream systems, or potentially displace the incumbent socio-technical regime (Gibbs & O'Neill, 2017).

Emanating from these two foundational concepts, threee predominant frameworks of transition theory – strategic niche management (Schot & Geels, 2008), transition management (Loorbach, 2007), and the multi-level perspective on socio-technical transitions (Geels, 2002) – are elucidated below. Derived from the multi-level perspective approach, an explication of a fourth, more niche conception of change, namely the pluriversal pathway, concludes this deconstruction of transition theory (Vandeventer et al., 2019).

Strategic Niche Management

The transition theory of strategic niche management maintains a specific focus on the role that niche development plays in effectively cultivating peripheral technologies or practices to the point of diffused standardization. Moreover, the intentional creation and conservation of technological niches, defined as sites of radical or experimental technologies, practices, and structures separated from pressing market demands or economic imperatives, is presented as a method to engender paradigmatic shifts towards sustainable development (Markard et al., 2012; Schot & Geels, 2008). In essence, this niche-led transition entails a bottom-up process in which novel innovations nurtured in technological niches spread to broader market niches and ultimately supplant the incumbent regime with a new socio-technical regime, as visualized in Figure 2.3 (Schot & Geels, 2008).

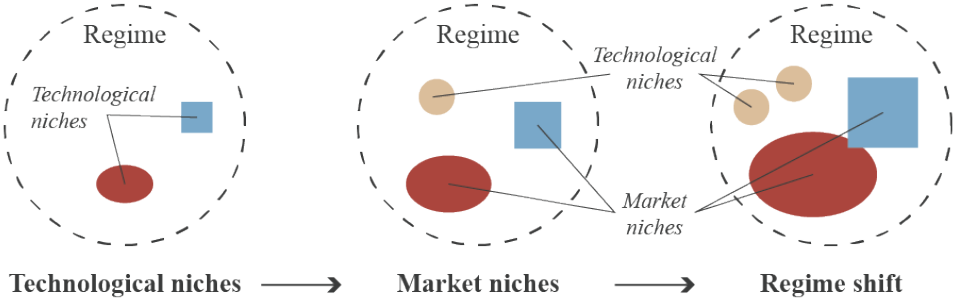

Figure 2.3. Process of strategic niche management. Source: adapted from Schot & Geels, 2008.

Although niches can arise from collective organic origins, strategic niche management involves a form of reflexive governance in which the future evolution of niches can be prescribed and directed through structured research & development initiatives or demonstration projects (Schot & Geels, 2008). In that regard, niches operate as 'proto-markets' with explicit objectives either to test a technological design, resolve a discrepancy between a technological innovation and current market conditions, or introduce a technological novelty geared towards sustainable development (hearkening back to the techno-optimist fix detailed in Section 1) (Schot & Geels, 2008). The strategic management and paradigm shifting potential of these niche environments is contingent upon three internal processes (Schot & Geels, 2008). First, the explicit articulation of expectations and visions provides direction, provokes intrigue, and confers legitimacy to the sustained development of nascent technologies (Schot & Geels, 2008). Second, the building of robust social networks establishes a broad constituency in support of new niches

while simultaneously uniting relevant stakeholders and unearthing essential expertise and financial resources (Schot & Geels, 2008). Third, successful niche development entails encompassing and optimizing learning processes gleaned from multiple technical, cultural, infrastructural, industrial, political, and environmental dimensions (Schot & Geels, 2008).

Overall, strategic niche management contributes to transition theory with its conceptual framework for understanding and investigating how novel, innovative technologies or practices can be effectively introduced and integrated into established market regimes and thus occasion broader socio-technical transformation.

Transition Management

While strategic niche management narrowly concentrates on niche experimentation and development, the transition theory of transition management adopts a broader frame to scrutinize how complex societal change processes can be proficiently planned and directed to explicitly engender sustainable development (Loorbach, 2007). Uniting existing thought on technological transitions and complexity theory with governance and policy studies, transition management defines an operational, practice-oriented model and reflective governance approach for coaxing current transitions to a sustainable trajectory commensurate with planetary boundaries (Loorbach, 2007; Markard et al., 2012). Managing this social change – understood as the product of diverse actor interactions set against an ever-evolving societal landscape – entails the subtle stewardship of these actor relations (Loorbach, 2007).

Transition management is broken into four cyclical phases illustrated in Figure 2.4: strategic development, tactical engagement, practical operationalization, and reflexive evaluation (Loorbach, 2007).

Figure 2.4. Transition management cycle. Source: adapted from Loorbach, 2007.

Before diving into experimentation, the strategic development process begins with problem structuring and envisioning practices of a collective future imaginary in multi-stakeholder *arenas* (Markard et al., 2012; Schot & Geels, 2008). These arenas indicate "social

environments in which specific [regime, niche, and outside] actors operate under shared conditions, worldviews and routines" which enables the exploration, experimentation, and participatory co-creation of alternative ambitions, objectives, and initiatives (Loorbach, 2007, p. 82). The niche encounters and alternate imaginaries established in these transition management arenas (further distinguished in three distinct types in Table 2.1) influence the associated regime actors to, in turn, shape the overarching socio-technical regime (Schot & Geels, 2008).

Table 2.1. The three types of multi-stakeholder arenas. Source: adapted from Loorbach, 2007.

Type of Arena	**Characterizing Components**	**Time Period**	**Decision-making Basis**
Policy	Formal procedures, policy development, regulation, enforcement	Short-term	Representation, negotiation, consensus
Market	Economic interest, individual survival, competition	Short-term	Effectiveness and efficiency; top-down process
Transition	Informal networks, creativity, innovation	Long-term	Shared vision and agenda

Following this transition arena formation, the process of tactical engagement encompasses the promotion of captivating images and strategies in order to promulgate peripheral visions (Loorbach, 2007). This translation further mandates negotiations and shared goal-formulation for agenda building alongside developing new coalitions for networking (Loorbach, 2007). This engagement phase naturally bleeds into the operational implementation of innovative experiments and agendas (Loorbach, 2007). Viable interventions and initiatives are then propagated, replicated, and managed with an eventual ambition to occasion broader systemic change (Loorbach, 2007). In order to adhere to an agenda's initial intent, as well as improve performance and amass ongoing knowledge, learning processes of systematic monitoring and participatory, reflexive evaluating are continuously undertaken (Loorbach, 2007). This reflective process often triggers a return to the strategic development phase as adapting and adjusting visions warrants new agendas and experiments (Loorbach, 2007).

On the whole, transition management provides a theoretical and operational model for discerning and managing complex societal transitions. The collaborative coordination, strategic experimentation, and continual self-assessment insinuated by transition management provides a viable approach towards attaining sustainable development in line with planetary limits.

Multi-Level Perspective

The multi-level perspective transition theory has formed the conceptual basis for analyzing historical transitions and continues to be widely utilized for investigating prospective pathways of sustainable future system change (Markard et al., 2012; Vandeventer et al., 2019). According to the multi-level perspective, change in socio-technical systems is a product of the dynamic interactions and frictions between three synergistic levels

(delineated in Table 2.2): the macro socio-technical landscape which constitutes an exogenous, broader context, the meso socio-technical regime which stabilizes existing institutions and infrastructures, and micro niches in which potentially radical novelties develop (Geels, 2002; Schot & Geels, 2008). While the stability and permanency of these multi-faceted levels are ever fluctuating in isolation, these levels "can be seen as a nested hierarchy with regimes embedded within landscapes and niches existing inside or outside regimes" (Gibbs & O'Neill, 2017, p. 165).

Table 2.2. The three synergistic levels of the multi-level perspective. Source: adapted from Gibbs & O'Neill, 2017.

Level	**Scale**	**Components**
Socio-technical landscape	Macro	Spatial structures, political ideologies, societal values, beliefs, concerns, the media landscape, and large-scale economic trends (such as capitalism (Feola, 2020))
Socio-technical regimes	Meso	Existing technologies, institutions, formal and informal rules, normative roles, and practices
Niches	Micro	Protected spaces for experimental (and often technological) innovations

This pictorial portrayal of transitions as intimated by the multi-level perspective (Figure 2.5) provides a valuable foundation for comprehending the synergistic bottom-up and top-down dynamics of socio-technical change (Vandeventer et al., 2019). The dominant regime (depicted as an amorphous, rectilinear form) is initially fixed but progressively destabilizes and loses coherence due to landscape pressures; thereafter, the constitutive institutions of the incumbent regime attempt to regroup and readapt. Niche innovations (represented by multi-directional arrows) concurrently coalesce and gradually gain momentum to capitalize on open slivers of opportunity for these novelties to assimilate to or fundamentally shift the prevailing socio-technical paradigm. This process ultimately produces a new regime – or in this graphic context, a new amorphous blob.

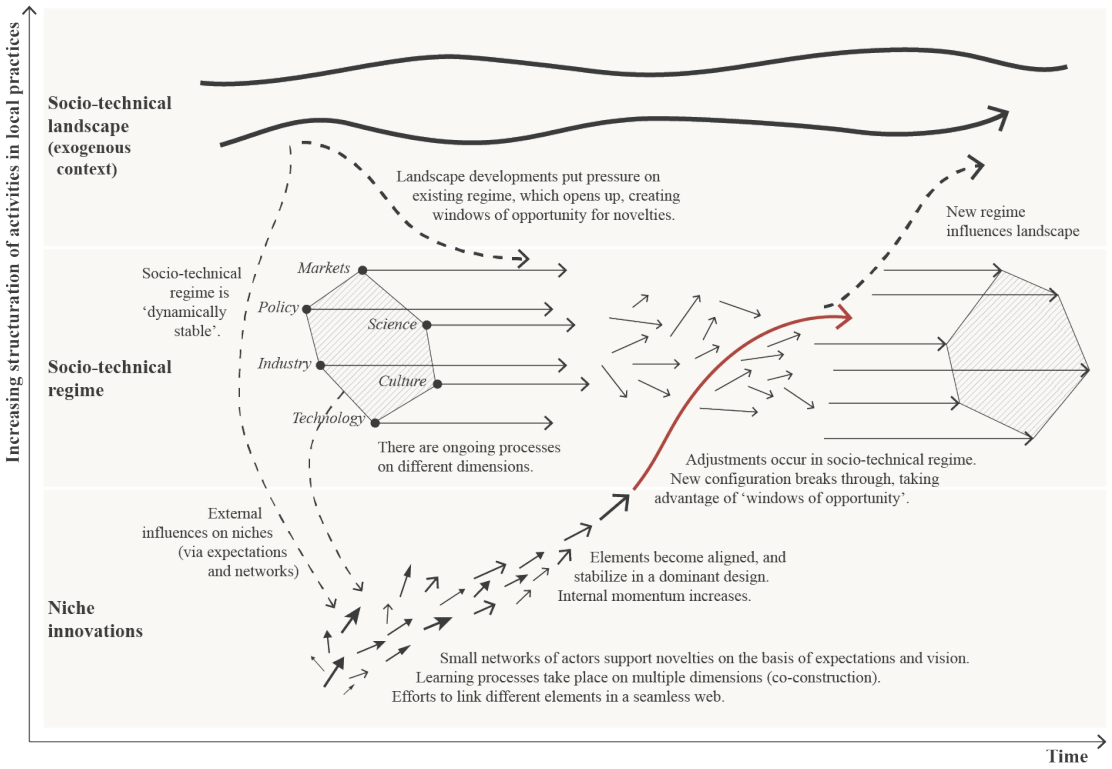

Figure 2.5. Multi-level perspective on transitions. Source: adapted from Vandeventer et al., 2019.

Given the variety of niches (and their substantial transformation potential if landscape pressures debilitate or destabilize the dominant regime), four predominant pathways for regime change have been distinguished and depicted in Figure 2.6 (Geels & Schot, 2007).

	Well-developed	Not well-developed
Symbiotic	*Reconfiguration*	*Transformation*
Competitive	*Substitution*	*De-alignment & Re-alignment*

Figure 2.6. Four pathways for regime change. Source: adapted from Vandeventer et al., 2019.

Underdeveloped niches with an amenable view of the incumbent regime allow actors to incorporate desired elements from the niche innovation, thus *transforming* the regime while maintaining its overarching structure. Well-developed, synergistic niche innovations assimilated into the regime mandate structural modifications that *reconfigure* the regime. In contrast, a well-developed niche devised with a competitive tilt wholly replaces and *substitutes* the prior regime if it breaches its micro limitations. Lastly, the occurrence of multiple competitive, underdeveloped niches *dealigns* the prevailing regime as these antithetical niches strive to monopolize their individual innovation. When one niche attains dominance, a new regime *realigns* around this sole survivor.

In essence, the multi-level perspective effectively explains socio-technical transitions as a byproduct of the fluid dynamics between macro landscape variations, meso regime persistence, and micro niche innovations.

Pluriversal Pathway

Vandeventer et al. (2019) interrogate the aforementioned multi-level perspective framework through the contextual frame of the capitalist-growth system. In particular, certain assumptions of the multi-level perspective, namely its competitive characterization of change pathways, are challenged in order to ultimately propound a 'Pluriversal potential pathway for change' as an alternative transition theory that remedies the presumptions embedded within the multi-level perspective. Following the language of the multi-level perspective, the socio-technical regime is redefined as the capitalist-growth regime. This incumbent capitalist-growth imperative constitutes a socio-technical regime as the capitalist-growth regime:

> consists of [an] economic system, which in its entirety pursues economic growth in a quest for capital accumulation and consequent re-investment; a technological system characterized by fundamental social features (i.e. a socio-technical system); a set of semi-coherent rules dictate acceptable conditions of participation in the system; and both actors and institutions stabilize it through interdependence and dynamic, ongoing interactions (Vandeventer et al., 2019, pp. 275–276).

Within the incumbent capitalist-growth regime, degrowth is conceptualized as a radical niche innovation which presents an alternate vision for a sustainable future (Vandeventer et al., 2019). In opposition to alternative sustainable development models which intend to agreeably assimilate within the capitalist-growth regime (thus following a symbiotic pathway), degrowth challenges the fundamental premises of neoliberal economic growth. In calling for the dismantling and restructuring of the underpinning economic logic of the capitalist-growth regime, the diametric degrowth niche is categorized as a competitive niche-regime relationship. However, this competitive-symbiotic binary is where Vandeventer et al.'s theoretical frame diverges from the multi-level perspective.

The multi-level perspective operates under an implicit competitive bias, or a "zero-sum understanding of change: over time, one niche will win and one uniform regime will ultimately exist" (Vandeventer et al., 2019, p. 276). Yet, the supposition of one individual niche replacing a sole regime in perpetuity disregards the possibility that niches can be symbiotic with one another and that multiple regimes can co-exist (an improbability given the complexity of the modern socio-economy). This lapse of logic complements the competitive scarcity mindset of the capitalist-growth regime. Nevertheless, despite the capitalist-growth regime's veneration of profit as the singular objective of innovations, niches encompass a broad range of values and ideas which can simply exist without requiring ubiquitous dominance. Vandeventer et al. accordingly underscore the possibility of niches in harmonious symbiosis with each other – epitomizing intentionally mutual and 'complementary niche innovations' – while simultaneously striving to supplant the capitalist-growth regime. In line with the multi-level perspective framework, this vision

embodies Vandeventer et al.'s fifth pathway for change which allows for niche symbiosis and regime heterogeneity: the pluriversal pathway (Figure 2.7).

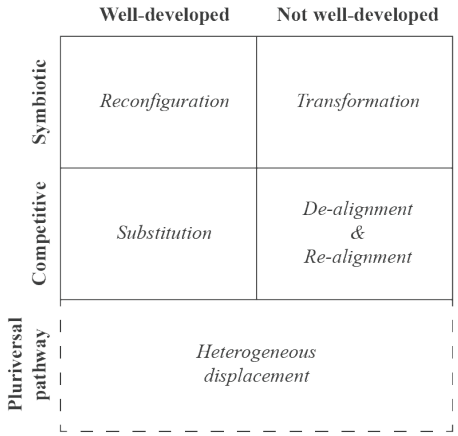

Figure 2.7. Five pathways for regime change. Source: text adapted from Vandeventer et al., 2019.

In Vandeventer et al.'s conception, "the resultant regime would involve a diverse set of micro-regimes that are not only symbiotic but also contextualized to local circumstances" (2019, p. 276). Indeed, the significance of local contexts is evidenced by the adaptive capacity of micro-regimes to tailor socio-economic systems to the particularities of their respective locales. Notably, this plurality creates opportunities for marginalized communities to lead their own transitions. This pluriversal pathway thus critically engages with localism (along with principles of justice, equity, and inclusion) and hints at the spatialization of transition theory.

Vandeventer et al. (2019) propose an amendment to the multi-level perspective framework to remedy its illogical inter-niche competition expectation. In its stead, the pluriversal pathway for change integrates spatially differentiated and heterogeneous micro-regimes which might supersede the capitalist-growth regime.

Applicability

While the four forenamed theories converge in their ambition to understand and facilitate transitions, they differ in their theoretical foundations, their emphasized focus, their pertinence, and their conclusions. Table 2.3 provides both a distilled summation of each transition theory and its particular relevance in the context of this report.

Table 2.3. Summary of articulated transition theories.

Transition Theory	**Defining Focus or Characteristics**	**Applicability to the Report**
Strategic niche management (Schot & Geels, 2008)	(Technological) niche experimentation and advancement to engender paradigmatic shifts towards sustainable development	Emphasis on crucial role of niches in manifesting macro-societal transitions; Potential to position degrowth as a niche
Transition management (Loorbach, 2007)	Transitions as a malleable process entailing strategic development, tactical engagement, operationalization, and reflexive evaluation	Operational model insinuating an active interventionist approach and flexible governance processes; Potential to realize degrowth through this model
Multi-level perspective (Geels, 2002)	Interdependent interactions of the socio-technical landscape, socio-technical regime, and niches catalyze systemic change	Analytical tool for scrutinizing and categorizing multi-scalar transition dynamics; Potential to position degrowth within these landscapes
Pluriversal pathway (Vandeventer et al., 2019)	Plausibility of niche symbiosis and co-existence of multiple, localized socio-technical regimes for a pluriverse future	Consideration of capitalism within transition theory framework; Articulated analysis of degrowth in transition

This comparative table also allows for the explicit juxtaposition of these four different transition approaches. While strategic niche management adopts a narrower, niche-oriented perspective focused on innovation and experimentation, transition management clarifies a broader perspective which emphasizes the importance of collaborative, reflexive processes in molding the direction of transitions. Maintaining a wider scale, the multi-level perspective espouses a structural perspective concentrated on the dynamic interplay between the three synergistic levels of the socio-technical system. The more recent theory of the pluriversal pathway reimagines the multi-level perspective through a capitalist perspective to ultimately accentuate the importance of decolonization and the recognition of multiple epistemologies. Nevertheless, these four transition theories emphasize the importance of envisioning, experimentation, and engagement in advancing sustainable development. All together, these theories all provide a conceptual framework for investigating and facilitating socio-technical transitions.

These four transition theories also warrant further exploration along two distinct avenues (additional analytical endeavors fall outside the purview of this report). Transition theory must be more explicitly spatialized to understand the physical manifestations of socio-technical transformation and to relate its conceptual deductions to planning practice (Gibbs & O'Neill, 2017). Moreover, transition theory generally foregrounds the complex, seemingly capricious logic of societal transformations (towards an ambiguous sustainable outcome) rather than unequivocally define the ideal sustainable conclusion of the examined transition (Gibbs & O'Neill, 2017). In response, the work of Section 3.1.2 expounds upon these articulated shortcomings and posits degrowth (dissected in relation to contemporary

sustainability transition theory) to spatialize planning practice and outline an unambiguous vision and process towards a sustainable, equitable future.

2.2.2 Critical Realism

Critical realism is a philosophical framework which aims to arbitrate between the objective science of reality and our conceptually mediated interpretation of reality (Danermark et al., 2019). According to critical realism, reality is comprised of three interconnected ontological domains: the empirical, the actual, and the real (Danermark et al., 2019). The empirical layer only encompasses observable events and experiences, while the actual layer refers to all events and occurrences, regardless of whether they are experienced or not (Danermark et al., 2019). The real layer represents the underlying, generative structures and mechanisms that form the events and experiences (Danermark et al., 2019). From an epistemological perspective, critical realism adopts a relativist stance to denote the fallibility of societally interpreted understandings of reality (Xue, 2022c). In other words, knowledge about external reality is shaped by social and conceptual factors which is flawed to varying extents (Xue, 2022c).

Adopting this critical realist position emboldens the report to distinguish these domains and investigate the interplay between what is experienced, what is actually occurring, and the underlying mechanisms which generate these events. Critical realism can inform degrowth spatial planning by emphasizing the underlying social, economic, and political structures that perpetuate unsustainable growth patterns. Indeed, environmental crises (such as resource depletion, ecological degradation, and massive biodiversity loss) and inequality issues (such as increasing socio-economic disparities, widening environmental injustice, and disappearing accessibility) are not isolated events but are rooted in deeper socio-economic systems. By examining these structures, critical realism can help identify the mechanisms and processes that maintain and institutionalize practices antithetical to social equity and environmental stewardship.

In that sense, critical realism does not delimit degrowth spatial planning to addressing the symptoms of unsustainable urban development. Rather, a critical realist perspective encourages the identification and transformation of the underlying structures that drive the unsustainable growth-imperative. This signifies the reformation of prevailing economic models, a critique of the power dynamics that propagate inequality and overconsumption, and a challenge to value-laden ideologies. In that vein, Xue argues that "a realist approach to ideology, as represented by critical realism, is particularly advantageous to strengthening the potentiality of planning as a driving force of societal transformation" (2022c, p. 112). Overall, the critical realist perspective underscores the complex and interconnected nature of social and environmental systems. By applying critical realism to degrowth spatial planning, researchers and planners can develop a more holistic understanding of the problems within planning today and work towards transformative solutions that promote ecological balance, social equity, as well as human and species well-being.

2.3 Analytical Framework

The research design (depicted in Figure 2.8) outlines an organizational framework for the analytical undertaking encompassed in this report. This structure concomitantly specifies the methods utilized to answer each sub-question (articulated below in greater detail). The assessment ascertained from each sub-question progressively informs and builds upon the preceding inquiry to ultimately answer the main research question:

How can municipalities divorce themselves from the prevailing capitalist-growth ideology and transition to an urban planning practice based on degrowth principles?

The structure of the report – and correspondingly, the research design – is split into two distinct components in order to comprehensively address this issue. The first half of the analysis (Section 3.1) encompasses a formative state of the art (or rather, a refining extension of this report's analytical framework); degrowth is applied to transition theory as well as to urban planning practice and development in order to define a viable pathway towards an unambiguous degrowth planning practice. The second half of the analysis (Section 3.2) relates this degrowth urban planning definition to a Danish setting. This section is further sub-divided as an initial inquiry concerning the general attitude and receptivity towards growth and non-growth narratives in Denmark is meant to establish Danish planning practice in relation to the circularity discourse. The exploration of this question is intended to serve as an approximation since capturing the nuances of the socio-economic and political pressures influencing Danish planning practice (as it pertains to degrowth) constitutes a thesis in its own right. With this background established, degrowth planning and development is explicitly contextualized to a particular case study. This exemplification enables an applied consideration of the probability (along with the associated barriers) of embarking upon and successfully implementing a degrowth transition.

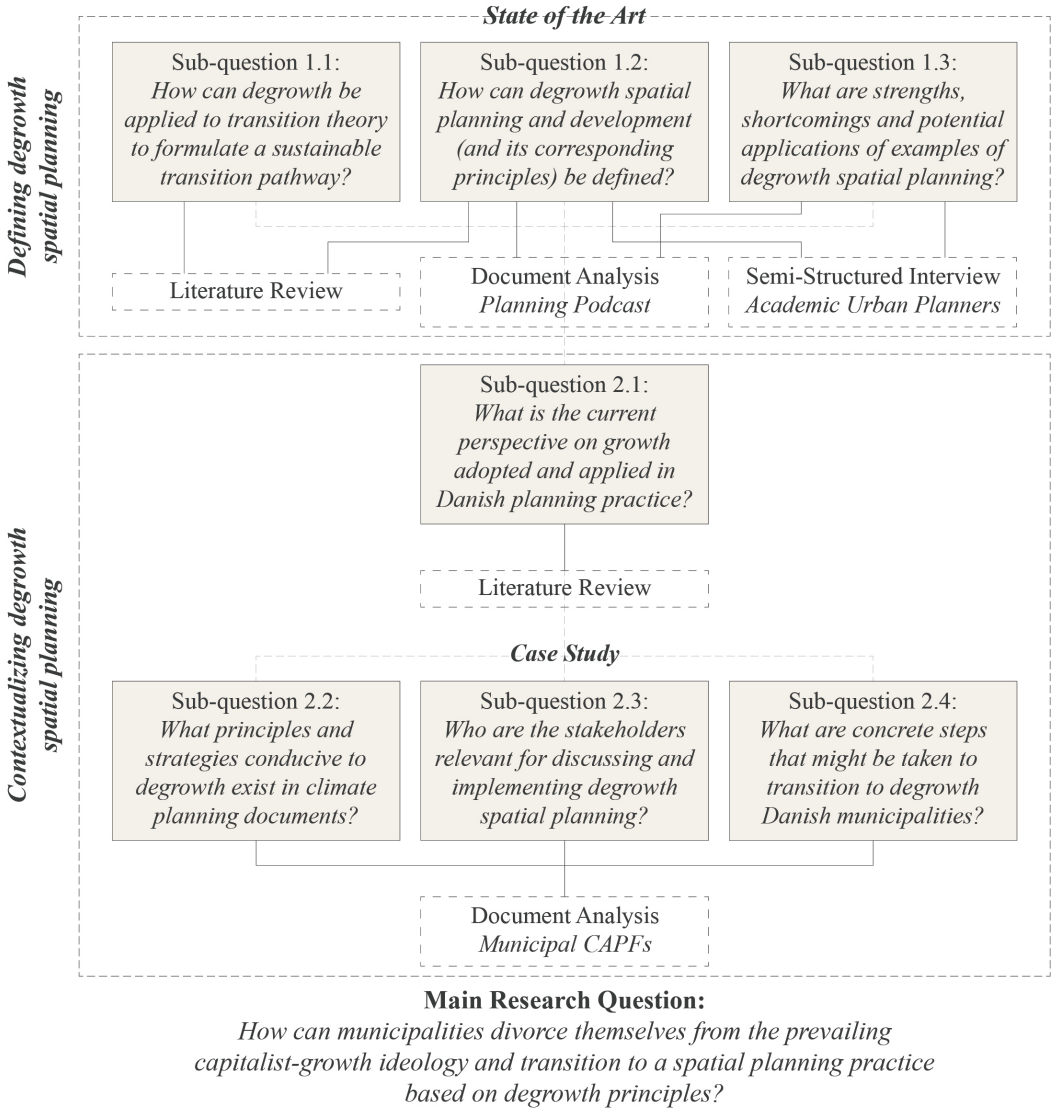

Figure 2.8. Research design.

Interpreting the foremost question: *"How can degrowth be applied to transition theory to formulate a sustainable transition pathway?"* is rooted in a literature review; uncovering a possible pathway for a degrowth transition requires the combination of sustainable transition theory and the theoretical concept of degrowth. This degrowth transition pathway is quickly delimited to the realm of urban planning and development. Thus, the second sub-question: *"How can degrowth spatial planning and development (and its corresponding principles) be defined?"* delineates the future of planning practice and development if aligned to a degrowth pathway and agenda. By the same token, the third sub-question: *"What are strengths, shortcomings, and potential applications of examples of degrowth spatial planning?"* extends this envisioning process to existing incidences of degrowth in order to emulate best practice and evade observed blunders. The prospective pathway and proposed definition of both of these sub-questions is considered through a literature review of degrowth planning literature, a document analysis of a post-growth planning podcast as well as semi-structured interviews with academic urban planners. This first set of sub-questions provides a foundational basis for the ensuing contextualization of

degrowth planning.

In combining the established theoretical framework with a contextual grounding, the fourth sub-question: *What is the current perspective on growth adopted and applied in Danish planning practice?* summarily generalizes the prevailing planning zeitgeist in relation to growth and development narratives in Denmark. A literature review provides insights into the historical development of Danish planning practices along with current, dominant ideologies.This contextual and theoretical foundation prefaces the investigation of integrating degrowth planning into actual practice through a specific case study. The fifth sub-question: *"What principles and strategies conducive to degrowth already exist in municipal climate planning documents?"* closely analyzes the climate action planning frameworks of each case study to demonstrate the current receptivity towards degrowth in each examined municipality. As a point of departure for this document analysis, the sixth sub-question: *"Who are the stakeholders relevant for discussing and implementing degrowth spatial planning?"* delves into demarcating the public and private actors pertinent to actualizing degrowth. With these instrumental actors identified, the final sub-question: *"What are concrete steps that might be taken to transition to degrowth Danish municipalities?"* accentuates the suggestions and proposals (along with the reservations) of the germane actors.All together, these sub-questions compose a vision of degrowth planning and development and highlight a potential pathway towards supplanting the dominant capitalist-growth regime with this ecologically and socially sustainable pathway.

In conjunction with the research design, Table 2.4 articulates the analytical significance and role of each utilized method. The broader literature review anchors the thesis in an overarching research agenda while the remaining methods of a document analysis and semi-structured interviews within the context of a case study lend this research contemporary specificity.

Table 2.4. Summary of each method's purpose.

Method	**Purpose**
Literature review	To provide a summation of contemporary knowledge in order to derive relevant theories, concepts, and phenomenons
Document analysis	To ascertain particularities of the growth narrative and circularity discourse from pertinent planning literature
Semi-structured interview	To accumulate specific expertise about degrowth planning and to characterize how degrowth is currently conceived at a municipal scale
Case study	To illustrate degrowth planning principles in a specific Danish municipal context in order to determine the reality (and feasibility) of transitioning towards degrowth planning and development

2.4 Method

Knowledge and data are compiled following the framework of the aforementioned research design to address the academic agenda of this report. Pertinent written work is amassed

through a *literature review* of scholarly texts and a *document analysis* of relevant planning documents. These data collection methods are augmented through *semi-structured interviews*. The resultant findings are exemplified and applied through a municipal *case study*.

2.4.1 Literature Review

The burgeoning academic attention directed towards degrowth (and the plethora of further research perspectives, proposals, and projects prompted by this recent visibility) warrants methodical evaluation. To that end, this report utilizes a systematic literature review as a primary data collection method to identify peer-reviewed literature which evaluates degrowth in relation to transition theory and planning practice. The review is therefore intended to construct a state-of-the-art overview of the academic positioning of degrowth within the realm of spatial planning and thereby constitute an integral component of the analysis and discussion. Moreover, the principal ambition of the review is to build upon existing theoretical and empirical knowledge to ultimately address the main research question. A comprehensive, systematic literature review is possible given the relative novelty and comparatively small number of works explicitly connecting degrowth, spatial planning, and transition theory. As a point of departure in this niche sphere, the selection procedure and resulting scope of relevant literature are clarified below in order to maintain transparency and reproducibility.

Following Ford et al.'s suggested elements of a systematic literature review within the purview of adaptation research, this report's review commences with the explicit articulation of the method's research objectives (2015). As indicated above, the review's intended aim is to garner conceptual and experiential literature connecting three disparate elements: transition theory, degrowth, and contemporary spatial planning practice and development. In alignment with this report's underlying analytical framework, the concept of degrowth unequivocally guides the literature selection; thus, a paper is deemed eligible for inclusion only if it explicitly considers either spatial planning (used synonymously with urban planning) or transition theory in conjunction with degrowth. While literature containing all three of the aforementioned elements also warrant inclusion, papers pertaining to just one component are not considered as part of the systematic literature review. Papers which provide a synopsis of each element are used to establish a conceptual definition when relevant. However, this literature is delimited to the formative analytical framework and problem formulation rather than the analysis and discussion and may therefore be considered as a secondary focused literature review.

Google Scholar and Scopus are the primary databases employed to find literature – in the form of peer-reviewed articles and academic books – due to their legitimacy and comprehensive catalogue. Although the intention of using two databases is to generate a rather exhaustive search, it is nevertheless possible that germane literature may slip through the cracks of this search process, especially as certain document types – dissertations, working papers, reports – are excluded from the search criteria. The search is not temporally limited, but the selected literature dates from 2013, likely in a reflection of the emerging contemplation of degrowth in scholarly research. Similarly, the criteria is not geographically restricted, but the review centered on English-language

literature. Despite the lack of geographical and time constraints, this linguistic limitation undoubtedly excludes some relevant literature and potentially imparts a Western bias on the analysis and findings of this report. Given the decidedly degrowth perspective of this thesis, all literature searches contained the indispensable term degrow* and post-grow* in combination with the following key words: "urban planning", "spatial planning", "planning theory", "spatial development", "urban development", "planning practice", "transition theory", "transition". Rather than using just one specific string of text, the search design is iterative and uses a flexible combination of the aforementioned key words in order to capture all appropriate articles (Berrang-Ford et al., 2015). Nonetheless, an exemplifying search entry for identifying germane works is written as: degrowth AND "planning" OR degrowth AND "transition theory". While this keyword search serves as the primary approach for identifying literature, the 'snowballing' technique (in which relevant literature is discovered through a paper's references and/or citations) is also employed to form a more robust and comprehensive search design.

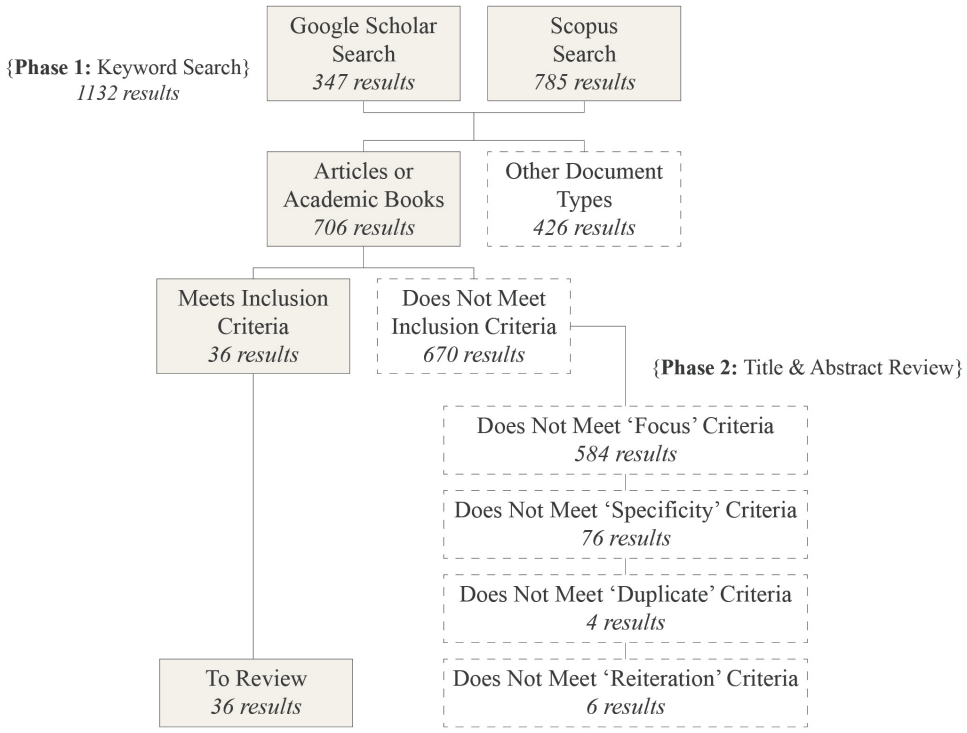

Figure 2.9. Literature search and selection process

Following the search and selection process visualized in Figure 2.9, a total of 1.132 publications encompassing scientific journals and books are initially amassed. From this first compilation, all titles, abstracts, and key words are scanned for their clear relevance to degrowth as related to transition theory and/or spatial planning and development. Thus, relevant literature is chosen for full-text review according to two inclusion criteria:

- A degrowth perspective is adopted and related either to transition theory or spatial planning and development (or both).
- Degrowth serves as an underlying ideological focus rather than a brief, inconsequential reference.

Conversely, literature was omitted following four exclusion criteria:

- The predominant focus is on an unrelated field or topic (such as agriculture or food systems, tourism, SDGs, or COVID-19).
- Mirroring the second inclusion criteria, 'transition' or 'planning' is broadly mentioned in relation to degrowth but not thoroughly or explicitly elucidated.
- Duplicates of the same article or book (where Google Scholar and Scopus overlap).
- A reiteration of an already articulated concept by the same author(s); in this case, the initial, defining paper is included and subsequent repetitions are excluded.

Following this inclusion and exclusion criteria, 36 publications were reviewed in full. As no literature was found that combined all three thematic elements, the reviewed publications were consequently split into two categories: one focused on the intersection of degrowth and spatial planning (33 articles) and the other centered on degrowth and transition theory (3 articles). All of the selected literature was qualitatively analyzed in alignment with the report's theoretical framework and coding was utilized to highlight pertinent information. For the literature focused on the synthesis of spatializing degrowth, each article was appraised in terms of (a) definition or notion of degrowth spatial planning; (b) thematic values and/or principles of degrowth spatial planning; (c) ambitions of degrowth spatial planning; (d) strategies and/or proposals for attaining degrowth spatial planning; and (e) potential examples of degrowth spatial planning presented in the article. The literature focused on transition theory towards degrowth assessed each article in terms of (a) theoretical framework; (b) role of degrowth in transition; (c) pathways to change; (d) strategy for transformation; and (e) top-down or bottom-up approach. The resulting evaluation of these publications is located in Appendix B.

This literature review was subsequently applied and exemplified through a Danish contextual lens. As this expanded the search scope to include grey literature in terms of national and regional climate legislation as well as climate action plans, the selection procedure and analysis of these context-specific documents are explained in the following Section 2.4.2).

2.4.2 Document Analysis

In conjunction with the foregoing systematic literature review, a complementary document analysis is employed to provide crucial information and relevant context to the report. Given the case study approach of this report, a document analysis is a particularly pertinent research method to supplement academic literature with non-technical literature works that contribute grounding, contextualized information (Bowen, 2009). The analyzed documents can be bifurcated into distinct categories:

1. Post-Growth Planning podcast
2. Municipal Plans

The first category consists of a non-traditional material, namely a podcast centered around post-growth planning. This podcast, hosted by the planning academics Christian Lamker and Viola Schulze Dieckhoff, entails a set of 17 interviews (to date) with a variety of planning researchers and practitioners. This podcast was discovered through the recommendation of an academic contact and deemed highly relevant to include in the

report as it unpacks the definitions, challenges, opportunities and context for spatializing degrowth in planning. These podcast episodes are analyzed together with the semi-structured interviews of this report (Section 2.4.3). In that sense, some of the interview questions articulated throughout the course of these podcasts influenced the formulation of the interview guide (Appendix C) to engender comparability between the two methods.

To extract relevant data from these podcast episodes, all 17 podcasts are reviewed in full and a thematic analysis is conducted. This approach involves the classification of prevalent themes expressed in the podcast into distinct categories for analysis (Bowen, 2009). From an incomplete transcription written while listening to the podcast, information is organized around the themes of:

- Contemporary planning
- Barriers to post-growth[6]
- Strategies and learning
- Post-growth planning is...[7]

From this distilled analysis, an image of the contemporary conditions, challenges, proposals, opportunities, and definitions of degrowth spatial planning is configured. In-text references to the podcasts are distinguished by the interviewee name in the following format: (Interviewee Name, Podcast). The full results of the podcast analysis are located in Appendix D.

The second category of this document analysis encompasses the municipal planning documents of two strategic climate plans. These documents provide information on the specific policies and strategies adopted by Danish planners to manage growth and development. The analysis of these documents enables the identification of the goals and objectives of planning policies and the measures and instruments used to implement these policies.

Table 2.5. Analyzed municipal planning documents.

Document	**Authority**	**Year**	**In the text referred to as:**
Climate Action Planning Framework (CAPF)	Fredericia Municipality	2020	(CAPF, 2020a).
Climate Plan 2020	Fredericia Municipality	2020	(CP, 2020b).

The documents detailed above in Table 2.5 are thoroughly analyzed. Here, a critical reading approach, which underlines the explicit topics as well as the implicit or implied themes in the studied document, is employed (Lehtinen, 2018). This content-focused analysis is applied to establish the prevailing socio-ideological framework of these municipal documents and to interpret these plans from a degrowth perspective. Taking inspiration

[6]Of note here is the use of the term 'post-growth'. As the podcast employs post-growth, this was also used throughout the document analysis but changed when adopted into the full text to retain consistency. This paper positions degrowth and post-growth as synonyms, so the terms are understood as interchangeable.

[7]This phrase served as the culminating question for all podcasts. It is therefore maintained as the thematic heading to make the responses coherent. Put in other words, this category pertained to definitions of post-growth planning.

from the work of Ruiz-Alejos & Prats and Xue, this document analysis seeks to ascertain incongruities between planning proposals and overarching climate ambitions, specifically as wrought by the hegemonic imperative of economic growth (2022; 2018). To that end, this critical reaching approach focuses on determining the following points:

1. What are the goals formulated in the plan? What conceptualization of sustainability do they imply?
2. What is the vision? How is it formulated?
3. Do any of the highlighted principles or themes correspond with degrowth principles?
4. What are the suggested strategies? What are the proposed urban interventions?
5. How do they relate to the goals and vision?
6. What is the role of growth in the articulation of certain strategies?
7. Are any of the proposed strategies conducive or amenable to degrowth[8]?
8. Who are the key stakeholders?

Climate Action Planning Framework (CAPF) 2020, Fredericia Municipality

The CAPF for Fredericia Municipality is reviewed in order to understand both how Fredericia Municipality intends to achieve net zero emissions by 2050 and how the municipality plans to adapt to climate change. The geographically unique plan is particularly examined for its approach to and positioning of characteristic elements of the capitalist-growth regime such as job and population growth. This document is translated from Danish to English using an online translation service.

Climate Plan 2020 [*Klimaplan 2020*], Fredericia Municipality

The Climate Plan 2020 for Fredericia Municipality is dissected to provide an overview of the municipality's climate ambition and sustainability vision for the future. This document therefore helps produce empirical knowledge the manner in which sustainability and growth are part of the municipal goals for urban development. Fredericia's Climate Plan is also utilized as a basis for a revised climate plan steered from a degrowth perspective. This document is translated from Danish to English using an online translation service.

2.4.3 Semi-Structured Interview

This research employs semi-structured interviews as a method of accumulating qualitative knowledge. Correspondingly, these interviews serve as an essential component for analyzing degrowth spatial planning.These interviews are conducted remotely using video communication systems – thereby enabling non-verbal communication – in order to engage relevant interviewees in a dialogue without geographical limitations. These interviews are conducted in a semi-structured manner, allowing for open-ended questions that enable the interviewee to expand upon the determined themes with new insights, interpretations, and inquiries (Brinkmann, 2018). To ensure pertinence, the interviewees are chosen based on their professional expertise and connection to the realm of spatial planning.

[8]Inspired by the qualitative discourse analysis of Buhr et al., degrowth ideas are distinguishable in the acknowledgement of the detrimental impacts of economic growth in terms of environmental deterioration or decreased well-being (2018).

Complementary to this initial screening process aimed at identifying a heightened level of relevance, each interview is evaluated in terms of its validity and reliability (Brinkmann, 2018). The degree of validity exhibited by an interview serves as an indicator of the extent to which it remained focused on its explicit investigative purpose, while a high degree of reliability bears witness to the consistency of the interview's outcomes. Following the interview, the conversation is transcribed clean verbatim, meaning the dialogue is minimally edited for clarity and accuracy (available upon request). These transcriptions are codified and distilled to filter for specific vocabulary and to categorize the discussion into discernible topics for the empirical analysis (clarified notes are located in Appendix E).

The semi-structured interviews detailed in the report's analysis are split into two categories in accordance with the split agenda of the research design. In that vein, the first set of seven interviews constitute an exploration into how degrowth spatial planning is understood by a range of planning academics, researchers and practitioners (see Appendix C for an overview of the interviewees). These interviewees were chosen based on their professional expertise and background. All elite, semi-structured interviews are evaluated to have a high degree of validity as an interview guide was provided beforehand (also located in Appendix C). This interview guide afforded a clarifying structure and direction to the discussion while also enabling prior preparation. Moreover, the professional interest in degrowth spatial planning and the planning background of all the interviewees manifests a high degree of reliability, rendering the empirical knowledge garnered from each interview as highly trustworthy. References to these degrowth planning interviews are cited as (*Interviewee Last Name*, Interview).

2.4.4 Case Study

This report utilizes a case study approach in order to position degrowth spatial planning in a specific context. This contextualization offers the opportunity for further refinement, evaluation, and critical reflection. In particular, Fredericia Municipality is examined as a case in terms of its current orientation towards growth and its (potential or latent) amenability to degrowth.

The case reflects an *information-oriented selection*, meaning it is not randomly selected but chosen on the basis of certain factors deduced from research (Flyvbjerg, 2006). In part, Fredericia Municipality is selected as a case study due to its history as a pilot municipality for the DK2020[9] project. Fredericia Municipality is also selected as its population mirrors the average size of a Danish municipality (Region Syddanmark, 2022). At the same time, the purpose of this case study is not centered on comparison; the singular nature allows for a thorough analysis of complex phenomena (Buhr et al., 2018). Fredericia Municipality is therefore highly relevant as a localized exploration of degrowth spatial planning.

Although interviews were initially intended to be a key component in the qualitative

[9]Essentially inspiring municipalities to proactively formulate climate action plans that meet the objectives of the Paris Agreement, the DK2020 project provides the municipalities with advice and collaborative support. This collaboration is culminated in Climate Action Planning Frameworks and local climate action plans which demonstrate the path to carbon neutrality by 2050 for the municipality in addition to illustrating how the municipality will implement climate change adaptation measures (Realdania, 2023).

investigation of the case municipality, document analysis (refer back to 2.4.2) serves as the sole method for obtaining knowledge about the case. This is a result of polite refusals from the municipal employees contacted for interviews who indicated that they felt unable or unqualified to participate in a discussion concerning degrowth.

Results 3

This report's analysis is subdivided into two distinct sections. First, a state of the art positions degrowth at the nexus of transition theory and spatial planning. This categorization allows for both a general definition and potential transition pathway towards a spatial planning for degrowth to be stipulated. Second, this prospective pathway is subsequently considered and interpreted through the lens of a Danish municipal case study in order to understand the desirability, possibility, and potentiality of a transition to degrowth in spatial planning practices. The analysis concludes with a suggestion of steps for the case study's planning practice in pursuit of this degrowth spatial planning.

3.1 Defining degrowth spatial planning

The analysis commences by exploring proposed steps to materializing degrowth through the analytical framework of transition theory as propounded in recent scholarly literature. The following section consolidates and condenses existing academic literature and grey media as well as expert interviews to establish a comprehensive understanding of contemporary conceptions of degrowth spatial planning. The following section synthesizes the perspectives of degrowth in transition theory and degrowth in spatial planning practice together in order to posit a generalized potential pathway for progressing towards a degrowth spatial planning.

3.1.1 Degrowth in Transition

Stated simply, transition theory is a theoretical framework that analyzes and articulates how societies can evolve from one presiding socio-economic system to another, as detailed in Section 2.2.1. Thus, considering degrowth through the lens of transition theory[1] entails interrogating how the prevailing socio-economic system can shift to an alternative degrowth system. As the degrowth discourse has yet to collectively specify how the movement might progress from theory to operationalization, actualizing the massive socio-economic transformation insinuated by degrowth remains a complex conundrum (Fitzpatrick et al., 2022 outline various degrowth policy proposals). To that end, this section investigates existing academic attempts to detail this transition at the intersection of degrowth and transition theory. Based on this analysis, this section culminates with an elaborated articulation of transition management (TM) from the explicit perspective of degrowth.

[1]Transitioning to degrowth is considered through the lens of transition theory within the confines of this report, but this represents just a part of a broader debate concerning how to transition to degrowth. While this report is delimited to degrowth and transition theory, there is a much larger body of literature surrounding degrowth in transition more broadly (for example, see Buch-Hansen, 2018; Koch, 2020; Schmid, 2022).

Table 3.1. Distillation of degrowth transition theory literature review.

Article title and author	**Theoretical framework**	**Role of degrowth**	**Pathways to change**	**Transition strategy**	**Vertical approach**
Future green economies and regional development: a research agenda (Gibbs & O'Neill, 2017)	Multi-level perspective	Initiatives as niche developments contrary to the dominant regime	'*Stretch and transform*' perspective	Interstitial (*possibility of ruptural*)	Bottom-up (*implicit*)
A degrowth transition: Pathways for the degrowth niche to replace the capitalist- growth regime (Vandeventer et al., 2019)	Multi-level perspective	Radical niche innovations to the capitalist-growth regime	*Pluriversal* potential pathway for change	Interstitial	Bottom-up (*implicit*)
Degrowth in the context of sustainability transitions: In search of a common ground (Khmara & Kronenberg, 2020)	Multi-level perspective, Multi-phase perspective, co-evolution, Transition management	Initiatives as grassroots transition experiments	Transition experiments using deepening, broadening and scaling up	Interstitial	Bottom-up (*although with an emphasis on top-down*)

To date, there is a rather small body of literature bridging degrowth and transition theory, demonstrating the nascent connection between the two (see Table 3.1). The three articles encompassed in the transition literature review expressly build upon one another, thereby gradually expanding the integration of the two theories. Though presenting slightly different roles of degrowth and pathways to change, all three articles advocate for an interstitial approach towards a degrowth transition. Namely, they all foreground the production and promotion of concrete alternatives in niches at the everyday level (Burkhart et al., 2022). Correspondingly, all three articles implicitly or explicitly advance a bottom-up focus for a degrowth transition. This preference for grassroots social movements and actions, arising from the lack of top-down governance propositions, fits neatly into the multi-level perspective (MLP) focus on local niches. This bottom-up predilection corresponds with the widespread consensus that a transition to degrowth must materialize from the bottom-up. This grassroots-led theory of change supposes that the collaborative degrowth actions of individuals and local communities might incrementally percolate upwards to revolutionize hegemonic social, economic, and political structures over time (Baumann et al., 2020). In other words, this literature on the transition to degrowth unanimously suggests the multiplication of a grassroots degrowth niche is the best way to beget overall societal transformation. Despite the harmonious similitude of these works, the three articles nevertheless provide differing insights.

Gibbs & O'Neill (2017) consider degrowth as one of a number of potential green futures notably to the far left of the green economy discourse. In their estimation, interstitial degrowth initiatives may incrementally *stretch* small-scale changes into *transformational* actions which ultimately revolutionize the reigning regime. Despite this theoretical stretch and transformation pathway led from the bottom-up, Gibbs & O'Neill intimate the insubstantial influence of degrowth niches so far (presumably due to its subversive critique of capitalism) indicates the improbability of development past the niche level. To address this obstacle, Gibbs & O'Neill highlight the necessity for degrowth niches to harmonize themselves with elements in the dominant regime to a degree that allows for the development of an alternative socio-technical regime. Yet, Gibbs & O'Neill stop short of elucidating what such an alignment might entail. Indeed, Gibbs & O'Neill provide a short, straightforward overview of how degrowth might be understood through the MLP, which is then elaborated upon by Vandeventer et al. (2019).

Gibbs & O'Neill (2017) and Vandeventer et al. (2019) utilize the MLP to conceptualize degrowth as radical niche innovations challenging the dominant regime, which Vandeventer et al. explicitly designate as the capitalist-growth regime. As detailed in Section 2.2.1, Vandeventer et al. take Gibbs & O'Neill's work a step further to challenge the competitive characterization of change pathways in the MLP framework and propose the pluriversal potential pathway for change to account for the reality of today's socio-economic complexities.This pluriversal pathway allows for niche symbiosis and regime heterogeneity, whereby a diverse set of micro-regimes that are not only symbiotic but also contextualized to local circumstances might supersede the capitalist-growth regime. Thus, degrowth is allowed to be expressed in a diverse plethora of interstitial, bottom-up forms. The proposed framework emphasizes localism, justice, equity, and inclusion and hints at the spatialization of transition theory. Altogether, Vandeventer et al. suggest that the pluriversal pathway offers an alternative to the competitive-symbiotic binary and supports a more collaborative and complementary approach to change.

Predicated on Vandeventer et al.'s work, Khmara & Kronenberg (2020) reiterate the notion of degrowth as manifested in far-reaching, radical niche experiments aimed at effecting societal – and to a lesser extent, technological – change. However, Khmara & Kronenberg also highlight the likelihood that these interstitial practices will linger at a localized niche level rather than engender a paradigmatic regime shift. In order to guide degrowth past the insulated niche level, Khmara & Kronenberg suggest that TM (defined by the authors as a novel governance approach for cultivating sustainable development) and its corresponding mechanisms should be utilized. Recognizing the reality of uncertainty, ignorance, and the illusion of full control, TM is characterized by an exploratory, design-oriented approach focused on process (specifically learning, searching, and experimenting) over outcome. Taking cues from the democratic and participatory principles of degrowth, TM should encapsulate a range of local governmental, working, activist, and civil society voices and agendas. Finally, Khmara & Kronenberg spotlight transition experiments – which incorporate the mechanisms of deepening (contextualizing comprehensive social learning and experimenting), broadening (replicating and expanding the reach of experiments to infiltrate niches), and scaling up (niche clusters breaking into mainstream practices) – as key instruments of TM. Instead of using sustainable development as a normative framework for addressing obstinate societal and environmental challenges, Khmara & Kronenberg

theorize that degrowth may constitute a foundational framework for TM. This literature serves as a springboard for further development of transition theory in relation to degrowth.

Transition Management for Degrowth

Following Khmara & Kronenberg's (2020) instruction that transition management (TM) must be modified to account for a degrowth transition, the subsequent section reexamines the TM model, in particular its four iterative phases, from a degrowth perspective. TM for degrowth represents an explicit plan for actualizing the future envisioned by proponents of degrowth: equitable living within planetary boundaries. The evaluation of TM in terms of degrowth also accords with Vandeventer et al.'s pluriversal philosophy, thus acknowledging that a plethora of potential pathways can harmoniously co-exist. Within this strategic pluralism framework, TM is contended with at a municipal scale. The municipal scale serves as a defining focal point for TM to reflect the reality of complex, contextual nuances; management must be localized to assess and address the conditions, challenges, and opportunities specific to each individual environment. Given the relatively small scale, municipal management can encompass a more participatory process in line with degrowth principles and provide protected spaces for alternative practices to flourish (Feola, 2020). TM at a municipal scale therefore allows for a contextualized, democratic degrowth which might be deliberated and aggregated with neighboring municipalities. Just as the niche may break through to the mainstream, the proliferation of these degrowth municipalities might ultimately coalesce and engender regional, national, and global change.

Table 3.2. Transition management in relation to degrowth. Source: adapted from Loorbach, 2007.

Phase	**Focus**	**Problem scope**	**Timescale**	**Level**	**Municipal implication**
Strategic	Culture	Abstract/ societal system	Long-term (30 years)	System	A culture centered around degrowth principles characterizes local societies
Tactical	Structures	Institutions/ regime	Mid-term (5-15 years)	Subsystem	Institutions incorporate and advocate for a degrowth agenda
Operational	Practices	Concrete/ project	Short-term (0-5 years)	Concrete	Degrowth initiatives demonstrate alternate visions of 'the good life'

Although ostensibly starting with strategic development, the processes of TM classified in Table 3.2 might arguably be more contemporaneous when put into practice. Namely, existing niches of degrowth or local initiatives operating with degrowth principles (categorized under the operational phase) might serve as foundational examples for strategic and tactical development. In that sense, reflexive evaluation (not depicted in the table as it is understood as a continuous, ongoing process rather than a strictly separate phase) and adaptive learning should be a continual characteristic of TM.

The ***strategic development*** of the transition to degrowth starts with specifying the problematic contemporary conditions which degrowth aims to eradicate. The problem

formulation for a degrowth transition must therefore be explicit in underscoring capitalism, the defining element of contemporary socio-technical systems, as the root cause of the multi-faceted crises pervading the landscape. As Feola articulates:

> capitalism is constantly in flux and—at least latently—in a state of change, evolution or transformation. Not considering the question of capitalism, and assuming that this system will persist as it is, means to be doing the ideological work of making capitalism seem natural and bound to persist forever. In contrast, naming and imagining other (i.e., non-capitalist) futures is an essential step toward opening up the debate to a more diverse range of possible conceivable futures, including those that entail the change *of*, rather than merely *within* a capitalist system (2020, p. 246).

As Feola denotes, developing future imaginaries is an indispensable process in the transition to degrowth. This envisioning encompasses collective goal and norm setting to establish an unambiguous trajectory for the municipality. These visualization exercises will likely unfold differently in each of the transition areas; the policy and market arenas must contend with the reality of the capitalist-growth economy while also trying to subvert it, while the transition arenas (or niches of degrowth) possess the innovative creativity and protected experimental space to formulate more revolutionary degrowth futures. In the pluriversal perspective of co-evolutionary change, the multiplicity of visions actually constitutes a strength; futures conditioned by contemporary circumstances provide more digestible goals, while radical visions maintain a subversive, inspiring agenda. Yet, it is imperative to acknowledge that envisioning processes can often disproportionately represent the interests of those with the most resources to invest in and fund this future. To counteract this tendency, envisioning exercises should be driven by civil society and champion democratic participation and a diverse plurality of voices.

Ultimately, the strategic structuring, envisioning, and establishing of this phase intends to supplant the prevailing growth-oriented culture with an ecologically and socially sustainable culture of degrowth. While the focus of this metamorphosis is long-term in scale, this prolonged objective should not detract from the possibility of more immediate cultural shifts. Indeed, as support for capitalism is waning (whether explicitly or implicitly) and environmental protection becomes a higher priority (Hickel, 2020), the amenability to an alternative culture might occasion a faster shift in the landscape level and the system as a whole. In facilitating this transition, strategic development processes must be furthered through tactical engagement.

Tactical engagement primarily concerns the translation of strategic development visions into the meso level of the socio-technical regime and its corresponding networks and institutions. Hence, with an explicit focus on changing the structures currently conditioned by the capitalist-growth regime, the tactical engagement phase contends with developing images, coalitions, and transition agendas for the shift to degrowth. Articulate images must be developed to clearly communicate the ambitions and possibilities of degrowth. To that end, tactical degrowth activities might employ experiential and interactive visual mediums which have the potential for subversion, education, and illumination (exhibitions, art and film festivals) to distill and dispense degrowth ideas and proposals. Considering the

distributive, egalitarian ideals of degrowth, coalitions should be comprised of a diverse set of actors - not only powerful actors with direct control of influential structures (regulations, technologies), but also the actors who grant these institutions legitimacy through their compliance and practices. In this way, a broad bloc of varied actors can adapt the degrowth vision into their own agendas. At the same time, they may also ascertain cultural, economic, institutional, or regulatory barriers which must be overcome to translate the degrowth transition vision into the regime level.

Acknowledging the immobilizing aversion to subversive systemic changes, ***practically operationalizing*** degrowth must take point of departure in the contemporary zeitgeist. This entails a strategic, successive implementation of degrowth proposals from the most broadly appealing during the initial transitional stage to the most radical during later, more established phases (Khmara & Kronenberg, 2022). The transition to degrowth can therefore begin with identifying and implementing 'win-win strategies' which present short-term economic arguments for mitigating environmental impacts while simultaneously providing an economic opportunity (Hinkel et al., 2020). From this point of departure, more progressively ecological, social, and degrowth strategies can be operationalized.

Just as a pluriverse of niches may harmoniously co-exist and collectively subvert the capitalist-growth regime, a pluriverse of strategic actions might extend beyond niche experiments to transform structural regimes and the socio-cultural landscape. While some top-down measures likely extend beyond the purview of a single municipality and require greater external collaboration, many generalized strategies can be refined by each individual municipality to eventually posit unequivocal, localized methods for implementing concrete degrowth initiatives. As the interpretation of national and international factors happens locally, the unique idiosyncrasies of places must be reflected in operationalizing degrowth. At the same time, municipalities should support and empower a (counter-)culture of experimentation and diversity to engender an alternative milieu which, in turn, champions grassroots niche innovations (Gibbs & O'Neill, 2017).

Reflexive evaluation should be continually undertaken to uphold the original objectives of the degrowth agenda while simultaneously enhancing its efficacy and accruing pertinent learning. This process should cover both systematic monitoring and participatory appraisal to ensure that the transition to degrowth is both successful and democratic.

As degrowth niches multiply and the cultural tide shows signs of shifting towards degrowth[2] (Hickel, 2020), managing the transition to an ecologically sustainable and socially just future becomes increasingly important. Although defined as a governance model, TM may also be understood primarily as a planning process. While this planning encompasses a variety of disciplines, spatial planning is a particularly crucial element of a TM towards degrowth as the arbiter of the built structures and metabolisms of future societies.

3.1.2 Degrowth Spatial Planning

Although the intersectional interconnectedness of degrowth's myriad components warrants transition along a plethora of lines, this report concentrates specifically on a spatial

[2]Intriguingly, the European Research Council is funding a multi-million euro project to explore pathways towards a degrowth economy (Universitat Autònoma de Barcelona, 2022).

planning practice that is reimagined and reinvigorated through a degrowth perspective. In order to actualize this degrowth spatial planning, the conditions of contemporary spatial planning practice regarding their orientation towards growth are reiterated (refer back to the Introduction for the initial characterization of modern planning). With the current zeitgeist established, degrowth spatial planning itself, its constituting principles, and strategies to materialize this planning permutation are detailed.

The Growth-Imperative as Spatialized in Planning

Stated succinctly, conventional contemporary planning practice is unambiguously oriented towards the advancement of growth (Barry, 2019; Ferreira & von Schönfeld, 2020; Lehtinen, 2018; Rydin, 2013). Although the modern form of European and Anglo-American planning was initially constructed as a critical tool for ameliorating public health and living conditions, the rise of neoliberalism saturated spatial planning so that the imperative for growth came to dominate development and planning (Olesen & Carter, 2018). This neoliberalization of planning also denotes the conversion from planning as the management of the effects of growth to planning as the active enticement and competition for growth (Olesen & Carter, 2018). According to Savini, this growth-oriented planning utilizes three mechanisms to foster (specifically urban) development as an insatiable engine of growth: "the functional polycentrism that organize city regions as competitive land markets, the maintenance of land scarcity to lubricate this competition and the institution of Euclidean land zoning[3] to regulate and protect private property" (Savini, 2021, p. 5). These planning instruments are reinforced by three phenomena – namely, the financialization, commodification, and privatization of built features and spaces – that have also accompanied the neoliberalization of planning and thereby characterize current planning practice (Ferreira & von Schönfeld, 2020). This capitalist-growth imperative has only been fortified by the diminished influence of planners as a consequence of the heightened authority of and dependence upon private, profit-seeking developers[4] (Lamker & Dieckhoff, 2022; Rydin, 2022; Xue, 2022b).

More recently, the growth-imperative has morphed (or is beginning to mutate) into the *green* growth-imperative. This eco-modernist turn is evidenced through the proliferating popularity of renewable energy and infrastructure projects, carbon-neutral building certifications, and sustainable city initiatives such as C40 (see Section1.2). Durrant et al. (2023) elucidate the consequential connotations of this latest growth edition:

> it is almost always possible to label the pursuit of more development as sustainable, even where it seems clearly to be following a neo-liberal agenda. This has been achieved by a focus on assessing and trading-off environmental, social, and economic dimensions rather than considering more fundamental conflicts including over resource use. Promoting sustainable urban development

[3]Savini characterizes *Euclidean* land zoning "to stress its essentializing, rationalist, categorical, and geometrical character. This form of zoning is today essential to planning because it enables a subdivision of land into discrete units and allows prescribing desirable combinations of land uses" (2021, p. 9). Essentially, this particular zoning rationale institutionalizes the notion of privatized, commodified property rights.

[4]This reliance and resultant power of the private sector is a result of the prevailing notion that market profitability generated by private forces are the best or only way to produce community benefits (Lamker & Dieckhoff, 2022; Xue, 2022b).

> through new development and meeting other policy goals using planning gain has become the acceptable face of green-growth/pro-growth planning (p. 2).

Nevertheless, although the (now green) growth-imperative ideology seems to be inextricably embedded in planning, the hegemonic paradigm has received criticism (to varying extents) from urban and planning scholars (Ferreira & von Schönfeld, 2020; Xue, 2022b). Indeed, Ferreira & von Schönfeld suggest many planners would embrace a radical change if a persuasively viable alternative were to be articulated (2020). A spatial planning perspective oriented around degrowth might provide this compelling, feasible direction.

Degrowth Spatial Planning Defined

To date, degrowth literature has not effectively or comprehensively considered its potential application to spatial planning (Kaika et al., 2023; Xue, 2022b). Despite the growing awareness of spatial planning's significance, the degrowth discourse continues to be dominated by debates on macro-economic policies and local practices (Khmara & Kronenberg, 2022). From the parallel realm of urban studies, degrowth has been, on the whole, cursorily employed as a radical future imaginary rather than critically engaged with as a concrete, revolutionary agenda (Kaika et al., 2023). Instead, (mildly subversive) planning actors contend with "watered down versions of the degrowth agenda which already have a spatial component or imaginary embedded within their discourse" (Kaika et al., 2023, p. 1192).

Yet, as Kaika et al. argue, integrating degrowth and spatial planning is politically pertinent and academically acute as an antithetical counter to the multiplying eco-modernist strategies that attempt to reconcile growth-oriented development with environmental crises and as once peripheral niches of growth-critical urban experimentations stretch beyond the niche (2023). Spatializing degrowth and degrowing spatial planning represent a profound, prescient opportunity both to occasion the socio-ecological transformation championed by degrowth and to reinvent planning in the face of multifaceted crises - reinventing urban planning in the time of complex crises (Xue & Kębłowski, 2022). Hence, with the necessity of combining degrowth and planning enunciated, the operative question becomes what exactly is this degrowth spatial planning? In order to understand how scholars have defined this concept, along with its associated principles and strategies, three data sets with 60 works in total were analyzed: a literature review of pertinent works relating degrowth to planning theories and practice, an analysis of the 'Post-Growth Planning' podcast, and interviews with planning researchers and practitioners (see Appendix B).

A plethora of fairly congruent definitions of degrowth spatial planning exist (see Appendix F). While some definitions are quite ambiguous: "Post-growth planning is to have an understanding of this spectrum, this connection between the places that have been created over time" (Boyle, Podcast), others are succinctly straightforward: "Planning where growth (in terms of land use and/or economy) is neither a necessary starting point nor a goal that must be achieved" (Lamker, Interview). While some definitions indicate more explicit values: "A regional imaginary of polycentric autonomism, a paradigm of finity in development, and care for habitability as principle of spatial organization" (Savini, 2021, p. 1076), others broadly outline that degrowth spatial planning "has to consider all

dimensions of a society in a consistent and systematic way and entails an interdisciplinary approach" (Xue, 2014, p. 137). Despite variations in specificity and semantics, there is no definition of degrowth spatial planning that stands apart from the rest as ideologically or conceptually contradictory.

Although there is certainly no single definition of degrowth spatial planning, this is perhaps to be expected given the evolving understanding of degrowth itself. In any case, inflexibly appointing one definition of degrowth spatial planning contradicts the heterogeneous malleability of the degrowth movement, and also disregards the vast diversity of socio-spatial complexities and nuances. As Kaika et al. express, "there are no 'singular' degrowth spatial practices that can fit and serve equally different geographical and social contexts" (2023, p. 1200). Even though the ambition to unearth one common definition of degrowth spatial planning must be abandoned to account for environmental idiosyncrasies (and to acknowledge the implausibility of finding universal definitions in general), degrowth spatial planning might instead be characterized through its principles.

Table 3.3. Number of degrowth principles mentioned in analyzed material.

Degrowth Principle	**Mentions**	**Degrowth Principle**	**Mentions**
(Social) justice	28 (47%)	Creativity	4 (7%)
Planetary boundaries	23 (38%)	Compact city/(r)urbanization	4 (7%)
Sufficiency/voluntary simplicity	19 (32%)	Innovation	4 (7%)
Solidarity/connection/cohesion	14 (23%)	Listening/learning	4 (7%)
Participation/collaboration	14 (23%)	Vibrant/dynamic/engaging	4 (7%)
Experimental/alternative	13 (22%)	Decommodification	3 (5%)
Well-being/the good life	12 (20%)	Care	3 (5%)
(Re)localization	12 (20%)	Communication	3 (5%)
Community-oriented/collective	12 (20%)	Reuse	3 (5%)
Autonomy	12 (20%)	Regeneration	2 (3%)
Democracy	10 (17%)	Realistically utopian	2 (3%)
Diversity	10 (17%)	Efficiency	2 (3%)
Openness/inclusivity/accessibility	9 (15%)	Questioning densification	1 (2%)
Commons and commoning	8 (13%)	Multi-scalar approach	1 (2%)
Sharing	7 (12%)	Non-capitalist	1 (2%)
Conviviality	7 (12%)	Consistency	1 (2%)
Flexibility/adaptability/resilience	6 (10%)	Transparency	1 (2%)
(Re)distribution	5 (8%)	Abundance	1 (2%)
Proactive/courage	5 (8%)	Habitability	1 (2%)

The subtle divergences in the definitions of degrowth spatial planning reflect varying combinations of degrowth values; differences can be seen as an author's emphasis or preference for underscoring certain themes of degrowth principles (enumerated in Table 3.3). Although 38 distinct degrowth principles (which may also be understood as defining adjectives characterizing degrowth spatial planning) were identified, these principles are chiefly compatible with one another. Indeed, many of these principles clearly work in concert with one another, such as listening/learning (mentioned by 7% of the reviewed works) and communication (5%), autonomy (20%) and democracy (17%), community

(20%) and commons (13%). Even two ostensibly opposing attributes such as sufficiency (32%) and abundance (2%) are, in fact, complementary when understood in the degrowth intention[5]. Considered as a whole, these principles complement one another to form a harmonious rendering of a degrowth future.

At the same time, many of these values are directly antithetical to core characteristics of the capitalist-growth regime: sufficiency (32%) versus excess consumption; solidarity (23%) versus competition; collaboration (23%) versus individualism; non-capitalist (2%) versus capitalist. This is only to be expected given degrowth's positioning in unambiguous opposition to growth. The amalgamation of these principles thus construct a spatial planning practice that is an explicit, critical alternative to the current growth-oriented practice. From the multi-level perspective, these principles represent provocative contradictions to the different dimensions of spatial planning processes within the prevailing capitalist-growth regime.

It is important to note that no one principle is mentioned by the majority of the literature, thereby accentuating the plurality of degrowth spatial planning definitions and principles. The prevalence of the most commonly mentioned principle of (social, inter- and intra-generational, distributive, housing) justice (47%) indicates the need to proactively champion this ideal of equity. While incorporating ecological values has become a rather normalized, straightforward agenda point (to varying extents in different contexts), justice - in particular when it evokes policies of redistribution - is a thornier topic to tackle. This convoluted nature perhaps explains the frequent mention of justice in relation to degrowth spatial planning; implementing justice is an integral yet complicated component of a socially sustainable planning process and this must be foregrounded and entrenched so it is not disregarded.

The second, most commonly cited principle of degrowth spatial planning is significantly distinguished as a respect for planetary boundaries (38%). The distinction of recognizing ecological limits rather than simply calling for environmental sustainability likely reflects a deliberate intention to specify objectives for achieving meaningful climate action so that they are not supplanted by superficial or vague calls for an undefined 'green' planning practice. As social justice and planetary boundaries directly relate to the environmental and social elements of sustainability (which, in turn, relates to the equitable, ecological future espoused by degrowth proponents), it is unsurprising that they are the most common defining principles for degrowth spatial planning.

Intriguingly, very few of these principles (with the exception of 'compact city' (7%), habitability (2%) and questioning densification (2%)) are actively spatial, urban terms. The rest of the principles, though applied in this context to the spatial planning process or as part of the future imaginary degrowth spatial planning would aim for, are not. This perhaps reflects the untested and generalized nature of degrowth spatial planning; principles should remain predominantly unspecified until they may be conceptualized and

[5]Abundance indicates the expansion of public goods in addition to an equitable redistribution of existing resources in contrast to the existing capitalist conceptualization of artificial scarcity (Hickel, 2020). This reimagining of radical abundance ties into the degrowth notion of sufficiency and finity as it implies that the understanding that there is enough to go around for everyone means that everyone will just take what they need and not stockpile in excess

operationalized for a given context. Alternatively, the lack of explicitly spatial principles might be due to the lack of tangible examples of degrowth spatial planning. Indeed, there was no concrete prototype of degrowth spatial planning discovered across any of the three analyzed data sets. Planning academics cited degrowth adjacent movements (such as Slow Cities, Transition Towns, and eco-villages) and degrowth practices (such as enabling public land ownership and promoting active mobility infrastructures) which align with various degrowth spatial planning principles. However, the paucity of palpable, unambiguous models of a spatial planning centered on degrowth (contemplated further in Chapter 4) highlight its speculative, peripheral position.

The spatial principles of 'compact city' and questioning densification also point out an unresolved point of contention for the degrowth spatial planning discourse. These two principles also highlight the one incongruity in this compilation of degrowth principles: namely, the question of density. While a handful of works advocate for densification to avoid excessive sprawl along the lines of the compact city concept, a few question the assumption of redensification and rurbanization as inherently optimal for degrowth. In other words, there is no optimal, determined organization or form of spatial development associated with degrowth. These conflicting principles indicate an ongoing debate within the degrowth spatial planning discourse concerning the question of where and how much space should one have to live. Regardless, determining the optimal degree of density represents a complex endeavor, and one that will undoubtedly differ from place to place.

Strategies of Degrowth Spatial Planning

Just as these principles coalesce to characterize degrowth spatial planning, they also delineate strategies employed by or for this alternative planning practice. Given the similarities between its various definitions, it is no surprise that spatial degrowth strategies are likewise comparable to one another. Indeed, slightly different terms with fluctuating focuses (as evidenced by the aforementioned degrowth principles) are utilized to articulate similar strategies of what degrowth spatial planning would entail in operationalization.

On the whole, strategies for a degrowth spatial planning practice are united under their intention to achieve the ecologically and socially sustainable aspiration of degrowth. These strategies can be classified under four overarching ambitions: 'land for all' combats commodification and privatization by prioritizing habitable, accessible commons and housing; 'housing sufficiency' denotes the emergence of abundant simplicity and sharing in housing arrangements as well as ecological retrofits; 'just mobility' targets the equitable strengthening of active and public modes of transport in lieu of individual, carbon-heavy infrastructures; and 'socially useful and ecologically sensitive planning' endeavors to engender a more compact, greener built environment (Fitzpatrick et al., 2022). Degrowth spatial planning strategies therefore represent the translation of these objectives into policies and mechanisms for occasioning a paradigmatic shift in planning towards equitable and ecological development, housing, mobility, and urban metabolisms.

Developed from the analysis of the degrowth spatial planning literature review, podcast, and interviews, an inventory of proposals is aggregated in Tables 3.4 and 3.5. Categorized into six topical themes, these degrowth spatial planning policies and instruments present an overview of the spatial strategies put forth by the degrowth discourse to date.

Table 3.4. Degrowth spatial planning strategies.

Theme	Proposals
1. Urban growth and development	1.1. Set clear limits to and/or halt further urbanization and construction to prevent sprawl 1.2. Implement urban containment policies at the level higher than local 1.3. Limit building and development permits, introduce trading zones for such permits, set maximum development volumes and cap land consumption 1.4. Revise zoning regulations 1.5. Develop a 'compact city' - dense development 1.6. Stipulate new development as low impact, small-scale, decentralized, compact, and multi-functional 1.7. Promote the quality of life of local residents and unique spatial characteristics rather than aiming to attract new residents 1.8. Revitalize underutilized spaces 1.9. Resolve urban/rural tensions
2. Land use	2.1. Direct and intimate relationships with land treated as a valued resource for socially equitable and sustainable land use, not as a commodity 2.2. Conceptualize, govern, and develop public land/land as commons 2.3. Repurpose intensively consumption-driven spaces 2.4. Allocation of sites and exceptions policies for community-based development through community land trusts and self build 2.5. Include private land in green infrastructure through economic incentives 2.6. Retrofit and reuse existing buildings, brownfields and former industrial sites over building new developments 2.7. Create and maintain clear requirements for public goods (clean water, air, accessible open spaces) along with a planetary public good 2.8. De-seal and rewild defunct, unused or underused sites for productive, small-scale ecological agriculture, forestry, and water management 2.9. Implement active soil protection to keep land free for climate protection, urban agriculture, water management, and social interactions 2.10. Enable flexibility in development control and temporary land uses 2.11. Allocate land for renewable energy production
3. Economy	3.1. Enable industrial democracy and socially useful production and services 3.2. Support communities and actors developing alternative visions and initiatives for degrowth (low value, non-commercial, and/or social) practices, economies, and futures 3.3. Relocalize production while also considering processes of externalization 3.4. Downscale consumption and production (in part by supporting second-hand and repair services) 3.5. Decentralize and democratize economic production 3.6. Implement an universal autonomous, minimum income and limits to wealth 3.7. Promote an economy based on communing, sharing, solidarity, and abundance 3.8. Cap total material consumption, adequate environmental licensing and emission limits

Table 3.5. Degrowth spatial planning strategies.

Theme	Proposals
4. Housing	4.1. Reduce housing-related environmental impacts through lean, sustainable design 4.2. Housing as an accessible, public human right rather than a commodity 4.3. Environmentally retrofit and redistribute the existing housing stock before building new housing 4.4. Adapt legislation to extend local government capacities to manage abandoned buildings 4.5. Safe and secure rental market – rent controls, rent subsidies, maximum rent; limit extensive private landed property and rent extraction 4.6. Increased share of non-profit housing developers (cooperatives, housing associations, trusts etc.), co-housing communities, and diverse ownership forms – promote housing commons and collaborative housing practices 4.7. Taxes related to living areas and overconsumption of housing 4.8. Reduce and optimize floor space per capita 4.9. Cap per capita housing consumption, transactions for properties, number of second homes, nights for short-term rentals, single-family dwellings
5. Mobility	5.1. Reduce and 'demarket' private motorized mobility and increase the availability, accessibility, and quality of low-carbon public transport, car sharing and non-motorized modes of mobility through redirecting investments 5.2. Convert existing car infrastructure into walking and cycling infrastructure to promote active modes of transport 5.3. Changes in city planning towards polycentricity, mixed space use, proximity and localizing activities 5.4. Monetary incentives internalizing the externalities – parking fees, gas and pollution taxes, congestion charges, regulated petrol consumption caps 5.5. Recognize mobility needs for social justice, species health, and ecological sustainability
6. Culture and process	6.1. A greater role for local government and local planning (as a facilitator, mediator, and communicator) 6.2. Involve and engage citizens in open decision making and participatory planning processes, allowing for more citizen initiatives in planning 6.3. Prioritize social justice and planetary boundaries over economic ones in envisioning and planning 6.4. Promote a sufficiency-based, degrowth-oriented lifestyle 6.5. Utilize and refine existing policy towards degrowth objectives 6.6. (Re)politicize and democratize planning 6.7. Shift away from a top-down, technocratic, expert-driven, volume-oriented planning towards qualitative, regenerative planning 6.8. Enable and encourage future envisioning scenarios, projects, models and experiments 6.9. Create and promote degrowth events and initiating dialogues with local politicians, civil servants, citizens 6.10. Develop plan-making at different scales with different stakeholders 6.11. Establish explicit degrowth objectives to avoid co-optation 6.12. Monitor, reflect upon, and share degrowth initiatives

In a certain sense, the degrowth spatial planning strategies presented above (Tables 3.4 and 3.5) represent nothing new. In fact, Baumann et al. emphatically elucidates that the concept of a public commons, or "local collaboration on non-private land", represents "humanity's oldest and most widespread mode of productive operation" (2020, p. 394). Indeed, the collective, public focus of many of these degrowth proposals mirror spatial planning's original emphasis on public social benefits (Kettner & Mössner, 2022). Further, a number of the strategies (autonomous public spaces, cycling advocacy, a slower, more conscious production cycle) might be seen as the extension of urban activist practices protesting consumptive, neoliberal development in the second act of the twentieth century (Savini, 2021). While the degree of revolution implied differs from strategy to strategy, the familiarity of some of these strategies insinuates a relatively high possibility of implementation.

A number of these degrowth strategies might also appear to fall outside the purview of local spatial planning; in particular, the proposals amassed under the theme of economy largely require national intervention beyond the municipal scale. As these strategies were derived from the assessed degrowth spatial planning material, economic issues are undoubtedly an indispensable issue for spatial practice. This dichotomy therefore manifests a debate over the role of economics in planning; economic factors are presumably beyond the jurisdiction of planning, but planning also possesses the power to influence spatialized places of economy. Some planners contend that, distinct from the degrowth focus on economics, spatial planning should center its agenda on the reduction of resource use and environmental impacts rather than actively engage with economic considerations (Arler, Interview). Conversely, others advocate for an increased economic literacy amongst planners so that they may debate and help develop national policies and frameworks which ultimately impact and influence planning practice (Rydin, Podcast). Degrowth spatial planning strategies centered around economic issues might therefore be deemed irrelevant in certain planning contexts and highly important in other planning agendas.

Despite the articulation of the aforementioned degrowth spatial planning strategies, Lamker asserts that degrowth spatial planning should be positioned as a critical counter to the idea that best practices can solve everything and it is therefore difficult to designate concrete strategies (Interview). Rather than focus on strategic operationalization, degrowth spatial planning represents a radically different way of acting and must therefore continually be contrarian (Lamker, Interview). In a similar vein, Leitheiser proposes that degrowth spatial planning should adopt an open-ended approach unbeholden to fixed outcomes (Podcast). This latitude emboldens individuals and institutions to take risks and experiment (which is a cultural strategy denoted in the degrowth spatial planning strategies). Xue suggests that the value in spatializing degrowth may be in its ability, as a theoretical concept, to critically assess shortcomings and growth-laden ideologies in contemporary planning (2022a; Podcast). With these appraisals in mind, it is possible to conclude that an encompassing strategy of degrowth spatial planning would be to enable adaptability and critical reflection in planning processes in a world of rapidly evolving conditions and climates.

In line with a spatialized culture of flexibility, this aggregation of degrowth spatial planning strategies should be understood as one contribution amidst a pluriverse of alternatives.

Although a number of the degrowth spatial planning works "assume a universal validity of their proposals" and thereby neglect geographical idiosyncrasies, there is a burgeoning call for a diversity of place-dependent solutions (Krähmer, 2022, p. 22; von Schönfeld & Savini, Podcast). Accordingly, there should be no top-down, conclusive definition of degrowth spatial planning or a prescriptive, resolute directive for its strategic direction. Rather, degrowth spatial planning may broadly spotlight the ecologically and socially sustainable spatial practices which align with degrowth principles and visions. This blueprint must then be specified and developed for the realities of each existing context.

An Outline of Degrowth Spatial Planning

Degrowth spatial planning entails the spatialized opposition of the hegemonic capitalist-growth regime. To that end, degrowth spatial planning encompasses socio-spatial equality along with regenerative and downscaling practices in line with planetary boundaries. Degrowth spatial planning emphasizes the need to transition towards a more localized and collective economy and commons focused on providing public goods and services rather than promoting privatization, commodification, and competitive growth.

Degrowth spatial planning seeks to reconfigure the built environment in ecologically sustainable and socially equitable ways that prioritize principles of multi-species' well-being, community resilience, and autonomous democracy. With that future imaginary in mind, degrowth spatial planning promotes strategies of:

- Compact and clearly defined development: Encouraging mixed land uses and compact urban forms while limiting excess development to reduce sprawl and minimize resource consumption. Prioritizing social justice, affordability, and inclusivity in urban development.
- Land use centered on commoning: Reforming the privatization of land and instead prioritizing retrofitting, renaturalization, and spaces of commons.
- Localized, steady-state economy: Supporting local, alternative economies and considering, accounting for, and analyzing processes of externalization. Downscaling consumption and production while stimulating the provision of public services.
- Housing as a public right: Promoting decommodified, shared housing organizations while supporting equitable housing redistribution and reducing excess housing consumption.
- Just and active mobility: Incentivizing low-carbon, active infrastructures and modes of transport while optimizing accessibility, proximity, and walkability.
- Degrowth culture and participatory planning process: Shifting the focus from material wealth and economic growth to overall well-being, including factors such as social connections, health, and a high quality of life. Engaging local communities and bottom-up actors in decision-making processes and incorporating diverse perspectives to ensure that the benefits and burdens of planning are distributed equitably.

From this synopsis, degrowth spatial planning should be specified according to each place's unique circumstances. Detailing degrowth in a given context should be based off critically and collectively articulating the distinct spatial needs and desires of the community, determining the level of urban and/or rural development that is compatible with planetary boundaries, and resolving how that level may be maintained over time.

3.1.3 Transitioning to Degrowth Spatial Planning

With transition theory as pertains to degrowth articulated (Section 3.1.1) and an overview of degrowth spatial planning defined (Section 3.1.2), the two can be brought together to conceptualize a transition to degrowth spatial planning. Given the impending economic conditions of crises and long-term stagnation (along with the reality that planetary boundaries prohibit infinite, exponential growth), there is a certain degree of inevitability in transitioning to some form of planning which is not so predominantly focused on managing growth (Schindler, 2016; Xue, 2022b). In recognition of this likelihood, conventional spatial planning might integrate degrowth principles and strategies to reclaim planning's transformative capacity. This influence might, in turn, occasion a paradigmatic shift which manifests in structures and systems that configure a (decolonized) socially just and ecologically viable future imaginary. However, as Ferreira & von Schönfeld emphatically express, degrowth is not "a recipe that can be homogeneously implemented across multiple geographical and cultural settings with guaranteed positive results" (2020, p. 58). Rather, degrowth spatial planning must be uniquely detailed and developed for each municipality to reflect its particular ambitions, challenges, development trajectories and stages.

The following exposition for a pathway to transition to degrowth spatial planning therefore represents a generalized suggestion. This articulated transition pathway illustrates one possible example of transformation from within a pluriversal perspective, thereby recognizing both that other pathways may coexist and that this particular proposal should be refined according to a specific context. Nevertheless, this proposed transition pathway to degrowth spatial planning reconsiders the theory of transition management (TM) specifically with the intention to change contemporary, growth-driven spatial planning. Before elucidating the spatial implications for the four phases of TM, there are a number of foundational questions which should be addressed and established for each individual municipality.

Prefacing Questions

Given the spatial complexity of modern society and culture, there is a veritable cornucopia of factors that coalesce to form the (at times, ineffable) characteristics that make each locale unique. Coupled with the geographical idiosyncrasies of each place, the need for developing place-specific solutions to effectively plan is undeniable. Simultaneously, this singularity of spaces begets the need to ascertain the collective ambitions for the future.

- What kinds of growth are desired?

As a certain degree of economic activity is necessary for well-being and an overall quality of life (and should be accordingly aided by planning), this query is perhaps better framed as a question of appropriateness. What level of economic activity and/or development is viable within ecological constraints – and ultimately regenerative? What level of economic activity and/or development is sufficient for optimal multi-species well-being? How can planning reduce economic excesses and inadequacies to effect social justice? At the same time, these questions are prefaced on the presumption that the majority of the local population is amenable to this down-scaling dialogue. Rather than be an imposition of an individual's professional or personal values, this transition must start with a democratic

examination of the consequences of growth. This might also serve as the starting point for the envisioning exercises encapsulated in the TM model.

- What is the optimal spatial scale of transformation?

Needless to say, the question of scale should be derived from the existing density of spatial structures and the spatial development needs of the local population – whether the existing building stock is fulfilled, underutilized, or insufficient. Rather than ordain a particular model of density or decentralization which ignores the reality of the built environment, a degrowth compact city might cooperatively co-exist with a smaller degrowth village or a larger degrowth bioregion. In other words, fixating on one specific spatial organization of degrowth constitutes an extraneous pursuit. Embracing a symbiotic plurality of practices, scalar strategies should be context-specific and malleable to adapt to alternative approaches and capricious conditions.

- What are the relations to other places?

As very few communities exist or operate in isolation, socio-spatial transition proposals developed at the municipal level must also consider the external influence of their transformation. This is, in fact, a natural step as several proposed policy changes for degrowth spatial planning must occur at larger scales (see Figure 3.1 below). Additionally, outsourcing consumptive practices and production to (often marginalized) external areas portrays an artificial promise of progress to the detriment of everyone. Open collaboration across multiple scales provides an auspicious avenue for symbiotic socio-spatial societies.

With these questions in mind, municipal planners might implement a TM approach to integrating degrowth into spatial planning.

Strategic Development

This strategic development phase begins with problem structuring. As elucidated previously (see Section 3.1.1), the capitalist-growth regime comprises the dominant socio-spatial system which must be transformed. The entrenched, systemic norm of the growth imperative constitutes the primary challenge to a transition to degrowth spatial planning. To combat this, the focal language of debate might shift from economics to a spatial planning practice centered on environmental and social values (Ferreira & von Schönfeld, 2020). This problem structuring phase should also encompass place-specific issues which exacerbate or add on to these hegemonic barriers. Viewed in an alternative light, enunciating local problems might also indicate specific areas for improvement to focus on during the TM process. Problem structuration might additionally entail historicizing spatial degrowth debates in order to avoid the repetition of past ineffective attempts to address the given problem and to supply inspiration and tested expertise (Kaika et al., 2023). The aggregated landscape and local issues form a crisis to which degrowth spatial planning can respond with alternative future imaginaries.

Practices of envisioning and "scenario planning can be employed to explore how the degrowth vision – an urban development that reduces consumption level for the sake of environment, prioritises justice and needs satisfaction, can be spatially framed" (Xue, 2022b, p. 416). The specificities of this alternative imaginary for a more ecologically and

socially desirable future should, as with every element of this TM process, encompass a multitude of heterogeneous voices within the local context. Following the generalized outline of degrowth spatial planning practice detailed earlier (Section 3.1.2), a possible vision of this degrowth future would entail: public land use prioritized both for decommodified, commoning practices and rewilding; accessible settlements characterized by diverse, multifunctional polycentricity; an equitably distributed, affordable housing stock; and attractive built environments with an enhanced, convivial quality of life for all local residents. This envisioning additionally requires a communal process of defining shared objectives and establishing normative guidelines in order to establish a clearly delineated trajectory for the municipality. While fashioning radically subversive, non-growth-oriented visions of the future is necessary to overcome the socio-technical supremacy of the growth-imperative, these visions also need to expressly enunciate their viability to embolden systemic operationalization.

This strategic development phase also spans the transition arenas which serve as the backdrop for the alternative experimentation and envisioning practices of this initial TM phase. Durrant et al. suggest the role of degrowth planners is to lead with their expertise in stipulating the probable implications of degrowth visions with a specific emphasis on environmental and social impacts (2023). Indeed, they posit it is the planners' responsibility to articulate the unsustainable reality of most growth-oriented plans rather than acquiesce and advance the alleged 'best practices' of green growth, sustainability certifications, eco-modernization, and technological innovative 'fixes' (Durrant et al., 2023). If, or when, planners find themselves at odds with one another over this degrowth spatial planning approach, this discrepancy may be seen as an opportunity for constructive, generative debate which manifest in novel insights (Ferreira & von Schönfeld, 2020). Planners may also harness the aspirations and voices of local civic societies and share their leadership role to foster community and alliance building as well as innovative grassroots niches (Durrant et al., 2023). This open solidarity approach should undoubtedly embrace a variety of actors, including private sector and institutional actors who are amenable to experimentation (at least to a certain degree). Developers and other economically driven actors who might typically be viewed as barriers to degrowth spatial planning should also be included for a genuinely inclusive process; although planners, with their authority to determine whose voices to consider in planning proposals, should highlight marginalized populations (Lehtinen, 2018). All together, these varied transition arenas might mobilize around ecologically sustainable and socially just conceptions of a sustainable future.

Tactical Engagement

Tactical engagement centers on the broad dissemination of the visions and strategies envisaged in the former development stage. This proliferation entails networking, negotiating, and collectively agenda building. In relation to degrowth spatial planning, this stage therefore implies amplifying the debate around spatial and institutional policies, strategies, and practices which inspire socio-spatial change beyond the niche level.This involves bringing together diverse institutional and grassroots actors to find, at least in part, a consensus for degrowth spatial planning practices which evades co-optation or greenwashing by the dominant capitalist-growth regime (Kaika et al., 2023). Although initiated from the municipal scale, this engagement should be pursued across scales to

ensure local, direct participation and national, top-down buy-in. To that end, Xue advocates for a multi-scalar planning model which incorporates local discourse and direct democracy into a centralized, hierarchical planning that offers broader planning power while simultaneously integrating representative democracy at larger scales (2014). While the exact form of planning should correspond to the particularities of each place, there is undoubtedly a need for both bottom-up and top-down planning engagement with a spatialized degrowth agenda.

Practical Operationalization

Just as capitalism emerged and developed within the context of feudalism and mercantilism, the seeds of degrowth (and its correlated permutations) can be sown within the dominant capitalist-growth regime. Niche innovations, which serve as cardinal centerpieces of the third stage of TM, represent the transformative seeds that provoke structural change. The tangible experiments, initiatives, and projects of these niche innovations provide an empirically grounded experience of operationalized degrowth. Accordingly, these niches may proffer a viable, tangible strategic direction for the municipality to move towards degrowth spatial planning.

Table 3.6. Degrowth adjacent niches. Data from Cittaslow, 2023; Global Ecovillage Network, 2023; Transition Network, 2023.

Niche Movement	Number of Countries	Number of Networks	Number of Initiatives
Eco-villages	119	23	912 communities
Slow City	33	20	288 cities
Transition Towns	80	26	1,136 groups

As shortly catalogued in Table 3.6, a burgeoning number of transformative planning practices centered around environmental action and social justice exist around the world. Although not an abundant plenitude yet, these movements demonstrated an increased interest in alternative ways of living. Taking cues from these global movements, each municipality can identify and enumerate existing degrowth adjacent niches within the local area which may be analyzed in terms of their successes and shortcomings. From this index, municipalities might interrogate how these localized niches can be supported, up-scaled, and multiplied. To evade co-optation, the expansive operationalization of these niches must be grounded in unambiguous objectives, be financed through non-competitive mediums which ensure the capacity to independently experiment, and be upheld by institutional actors who are receptive to radical strategies (Kaika et al., 2023). Planning may also support the emergence of new grassroots niches through allocating land for commons and affordable, accessible housing. Ameliorating the growth-driven burden of exorbitantly priced housing and reversing the privatization of public space would provide the free time, space, and cultural latitude for an increased engagement with degrowth practices and experimentation (Baumann et al., 2020). While these operational activities form a foundational basis for a pathway towards a degrowth future, degrowth spatial planning may also engage with implementation beyond the niche level.

To help mobilize and multiply niche innovations as well as address larger dimensions within the regime level, planning should operationalize spatial degrowth proposals which introduce complementary measures and policies to engender degrowth in spatial structures. Niches may provide more radical, experimental directions for degrowth spatial organizations and practices, while larger-scale proposals may focus on reimagining the existing morphologies of the built environment. The broad strategies for implementing degrowth spatial planning (documented in Tables 3.4 and 3.5) provide a point of departure for subtraction, amendment, and addition according to the contextual conditions and local ambitions of the municipality.

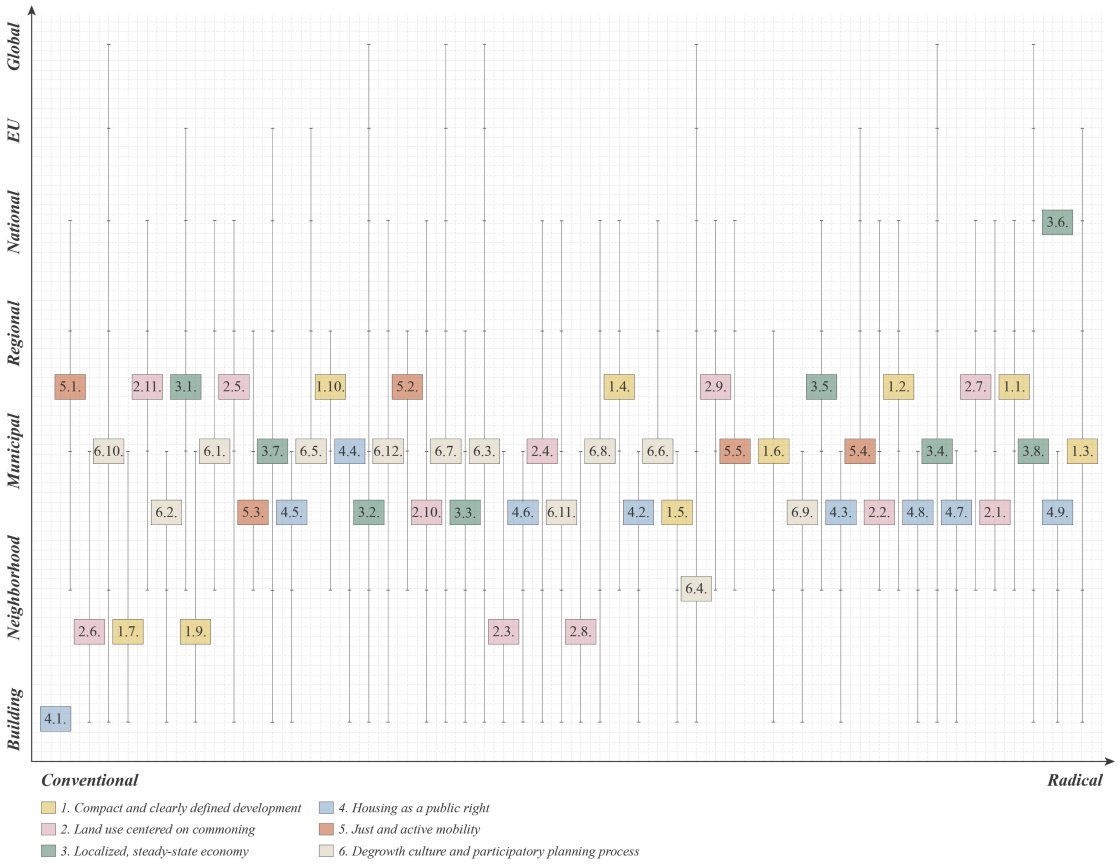

Figure 3.1. Scalar strategies from conventional to radical. Note: Numbers correspond to strategies listed in Tables 3.4 and 3.5.

This operationalization phase should ease into the transition to degrowth spatial planning through using existing policies and by introducing the most conventional degrowth spatial planning strategies first, illustrated in Figure 3.1. Planners may effectively utilize and optimize existing, accepted planning concepts (such as circular thinking and design) as well as existing tools (such as Life Cycle Analysis and carbon accounting) to initiate a transition to degrowth spatial planning that is rooted in real socio-spatial conditions (Durrant et al., 2023). While the most straightforward path to actualize degrowth in spatial planning is through caps on land use, traffic volume, housing development, and consumption (Xue, Podcast), the severity of these measures in comparison to contemporary policies would likely manifest in friction and opposition (Mete, 2022). Additionally, a number of these strategies encapsulate a wide scope of practices which may start off with a more palatable

measure and gradually expand to a more progressive policy. For example, fiscal mechanisms used to disincentivise carbon-heavy, individual mobility (strategy 5.4.) could entail parking fees or congestion charges on one end of the spectrum, and also encompass gas taxes and maximum caps on carbon-intensive travel on the other. By initially implementing degrowth proposals in alignment with already popular ambitions for walkability, increased cycling infrastructures, and 15 minute cities[6], degrowth spatial planning may develop within the capitalist-growth regime. By equally emphasizing niche innovations illustrating an alternative future imaginary, degrowth spatial planning can simultaneously elucidate a sustainable trajectory that is both feasible and desirable outside the capitalist-growth hegemony.

Reflexive Evaluation

Given the possibility of co-optation or 'unjust' sustainability transitions[7], degrowth spatial planning should prioritize this reflexive evaluation phase as an indispensable instrument to enable effective learning and reflection. Adopting a degrowth approach (or fixating on one specific model of degrowth) does not automatically equate to social and ecological sustainability (Ferreira & von Schönfeld, 2020); continuous monitoring and collective evaluation is necessary to maintain a just trajectory. Therefore, degrowth spatial planning should consciously engage with a wide variety of methods, theories and tactics (and especially considering past mechanisms, autonomist action, and combative struggle) to assess and amplify the movement (Dunlap & Laratte, 2022). At the same time, there is no moment when degrowth spatial planning may be seen as fully realized as the ideal end ambition is radically utopian. (Lamker, Interview). This continual phase of reflexive evaluation might consequently be seen as the check to ensure that degrowth spatial planning, while not capable of actualizing utopia, is incrementally implementing degrowth principles which align with planetary boundaries, regenerative resource use, and a high quality of life for all.

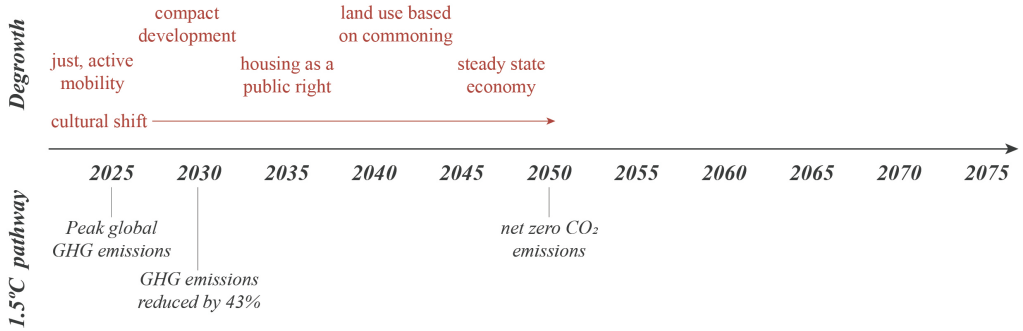

Figure 3.2. An indeterminate timeline of degrowth. Note: 1.5°C pathway dates from IPCC, 2022a.

Anticipating the exact moment when the aggregation of degrowth niches and degrowth spatial planning strategies might supplant the prevailing capitalist-growth regime is a

[6]The 15 minute city concept insinuates daily goods and services are accessible within a 15 minute walk or bike ride from any city site.

[7]Emphasizing the need for a holistic approach, an 'unjust' sustainability transition might arise from narrowly focusing on ecological elements at the expense of participatory or redistributive issues or from myopically focusing on greenwashing contemporary conditions (Barry, 2019).

rather futile endeavor (Vandeventer et al., 2019). Nevertheless, if temperature rise is to be limited to 1.5°C in alignment with the Paris Agreement, there are certain climate mitigation actions which must be met within a definitive timeline. As the transition to degrowth spatial planning insinuates a dramatic reduction in anthropogenic emissions, consumption, and production, Figure 3.2 attempts to synchronize the mitigation deadlines established by the IPCC with the overarching, mitigating ambitions of degrowth spatial planning. This approximate timeline (which serves as an image for reflexive evaluation in itself) points to the necessity of immediate action. Thus, the TM process applied for degrowth spatial planning as outlined above should be promptly introduced (and ideally implemented following localized refinement) for a diverse plurality of municipalities.

3.2 Contextualizing Degrowth Spatial Planning

The overarching outline of a potential pathway to occasion a transition to degrowth spatial planning is contextualized for a Danish municipality in the second section of the analysis. Contemporary Danish spatial planning practice as a whole is briefly elucidated to provide an understanding of how the multi-scalar framework of planning operates. Subsequently, the conditions of current Danish planning are evaluated to ascertain the role of growth in practice. To that end, the case study of Fredericia Municipality is introduced and its planning documents are critically analyzed for their perspective on growth. The climate plans of the select case study are also scrutinized in terms of their amenability to degrowth manifest in policies, and the indication of relevant stakeholders. Ultimately, this analysis culminates with proposed measures (derived both from the existing climate plans and the overview of degrowth spatial planning presented in Section 3.1) for operationalizing degrowth spatial planning in Fredericia Municipality.

3.2.1 Characterizing Danish Planning

As outlined by the OECD, Denmark operates with a three-tier system of government consisting of the national, regional, and local levels (visualized below in Figure 3.3) (2017). Nationally, the Ministry for Business and Growth provides a national planning report after every parliamentary election which articulates the government's overarching objectives and guidelines for spatial development and planning (OECD, 2017). The Ministry further promotes and instills national planning interests through publishing a quadrennial report, issuing industry-specific directives, and implementing special rules for the planning of specific activities (OECD, 2017). Regionally, governments predominantly focus on strategic development planning, regional economic development, and involving stakeholders to formulate a shared vision for the region (OECD, 2017). Locally, municipalities have substantial power in governing land use (OECD, 2017). To that end, municipal planners engage in comprehensive future-oriented strategic planning for their respective territories and create detailed municipal and local plans which determine land use, unless nullified by a national planning directive (OECD, 2017). In that sense, municipalities are restrained by the spatial development visions of the regional strategies, national planning directives, and the three sectoral plans which encompass strategic environmental objectives and zoning regulations for designated areas (OECD, 2017).

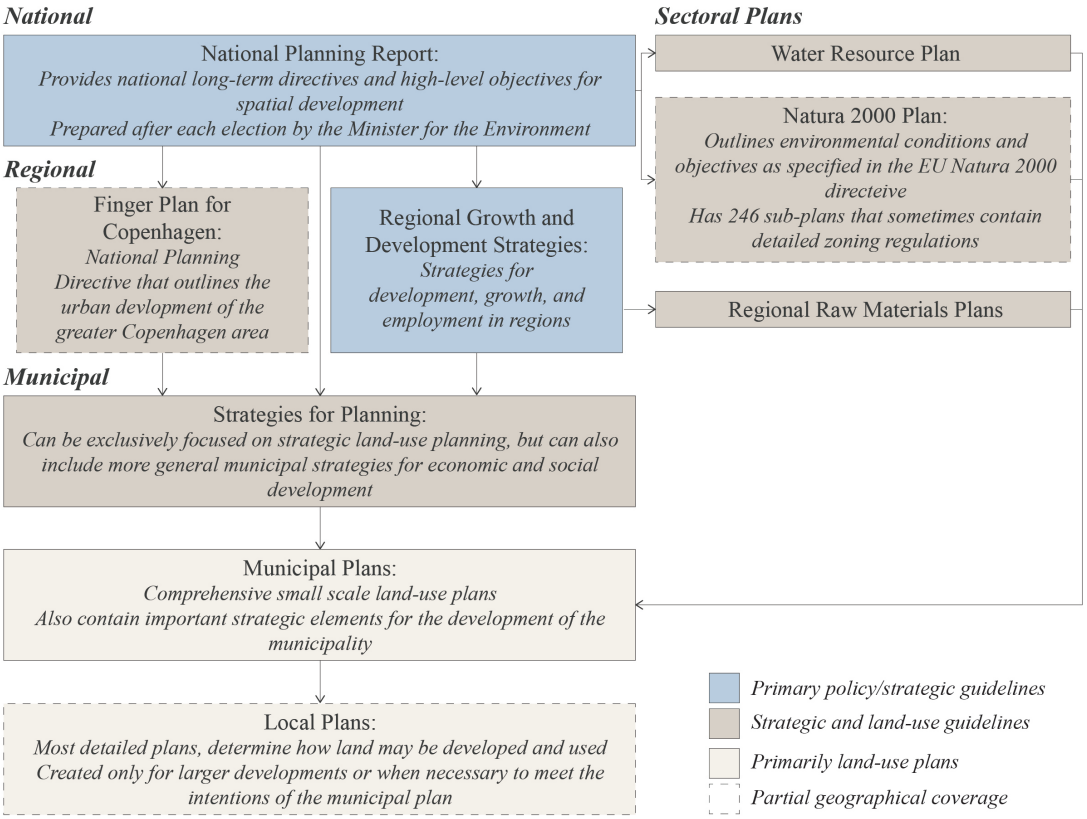

Figure 3.3. General framework of Danish planning. Source: adapted from OECD, 2017.

Regarding the current perspective on growth adopted and applied in Danish spatial planning, the conditions of Danish planning practice mirror the growth-driven pursuits of conventional planning practices across the Global North. Like many other countries influenced by the rise of neoliberalism[8], Danish planning's welfarist objective for attaining balanced, even development across the country was replaced by the vague intention to engender appropriate development and economic growth (Olesen & Carter, 2018; Xue, 2022c). This ambiguous appropriate development ambition directly reinforces the hegemony of the growth-imperative and inter-city competitiveness while maintaining the claim that the aspiration for growth is aimed at enhancing overall welfare and affluence (Olesen & Carter, 2018). At the national level, the strategic formulation of planning guided by the principles of growth and competitiveness is deemed imperative to address the challenges posed by globalization, to expand citizen well-being, and to safeguard Denmark's long-term prosperity (Xue, 2018). Yet, this contention prohibits collaboration as municipalities vie for more citizens and more company investments (Arler, Interview). Although horizontal coordination is prescribed by the defining framework of the Danish Planning Act, the document contains no specific qualifications about how consensus and solidarity might be attained (OECD, 2017).

Furthermore, Danish spatial planning practice is increasingly characterized by the scalar

[8]Although Denmark did not implement the kind of radical neoliberal reforms seen in the US and UK, it began to "drift towards more market-based and liberal policies throughout the period of 1970–2000" and ultimately re-envisioned the role of government "from an active coordinator to a neutral frame-setter" (Stahl, 2022, pp. 101, 110). This culminated with the victory of the (economically conservative) Liberal party in 2001 - the first time since 1920 that the Social Democrats were not the majority party.

tension between local planning rationalities centered around growth and regulation, spatialized through local objectives for growth and national actors emphasizing regulation (Olesen & Carter, 2018). This conflict is accompanied by "an ongoing power struggle between municipalities and central authorities in terms of clarifying planning powers and responsibilities" (Olesen & Carter, 2018, p. 697). As the capacity of planning to achieve equal development has been emphatically questioned, Danish planning has started to be increasingly deregulated with the intention of fostering growth in more rural regions of the country (Olesen & Carter, 2018). Yet, the debate positioning planning as a barrier for growth appears "to be characterised more by neoliberal ideology than genuine concern for socio-spatial inequalities rooted in social welfarism" (Olesen & Carter, 2018, p. 703). In summation, the idealistic objectives of Danish spatial planning are marked by the neoliberal prioritization of economic growth and urban development.

Hand in hand with the rise of neoliberalism, Denmark has also (rather famously) prioritized sustainability in its political agenda and socio-spatial planning (Xue, 2022c). Many Danish municipalities have pronounced bold ambitions to curtail or completely phase out all carbon emissions – Copenhagen intends to become the world's first CO2-neutral capital by 2025 with Aarhus, Odense, and a host of other municipalities shortly following by 2030 – while some municipalities – such as the island municipality of Samsø, which has been powered by local green energy since 2007 – have already achieved admirable climate objectives. Danish spatial planning has embraced this green agenda (and found political support to do so) through the proliferation of biking infrastructure, the promotion of reclaimed pedestrian streets, and the implementation of enhanced biodiversity stipulations – among other initiatives (Arler, Interview). Xue argues that the carbon neutrality ambitions of Danish planning are predicated on decoupling strategies and sustainability policies which represent a problematic, illusory green fix (2022c). This green fix strategy indicates that only environmental strategies which stimulate, or at least do not impede, economic growth and regional competitiveness are operationalized in reality (Xue, 2022c). Moreover, mechanisms of externalization account for, in part, some of the progress that cities such as Copenhagen have presented as a testament to their climate work (Krähmer, 2021). Xue concludes that this growth-oriented approach to sustainability will only worsen ecological degradation and debilitate Denmark's compelling pledge to plan for genuine sustainability (2022c). In other words, Danish planning practice is characterized by a green growth agenda, which (as described in the introduction) presumes that a continued focus on economic growth is compatible with protection of natural resources and the environment.

3.2.2 Case Study Analysis

This report foregrounds Fredericia Municipality as a case study to understand the realities of growth narratives – as well as the potential of degrowth ones – in shaping spatial planning on a Danish municipal level. Located on the east coast of the Jutland peninsula, Fredericia is part of the Triangle Region, a cooperative network of seven municipalities which emphasizes their collective industrial prowess, connectivity, and growth opportunities (Trekantområdet Danmark, 2023). Despite being the smallest municipality in Jutland in terms of its geographical borders (refer to Figure 3.4), Fredericia Municipality's population represents the average size of a Danish municipality with approximately 52,000 inhabitants (CAPF, 2020a). Likely due to its condensed size (134 sq.km.), the municipality is highly

urbanized with 97% of the population living in urban areas, primarily in the eponymous town of Fredericia (CAPF, 2020a). The municipality has continuously experienced a positive population growth (with a latest growth rate of 1.8% in 2022) and actively aspires to attract more young people, families with children, as well as higher education to the municipality (CAPF, 2020a; Region Syddanmark, 2022). This population growth, along with more people living alone, is driving an increased demand for new housing developments (CAPF, 2020a).

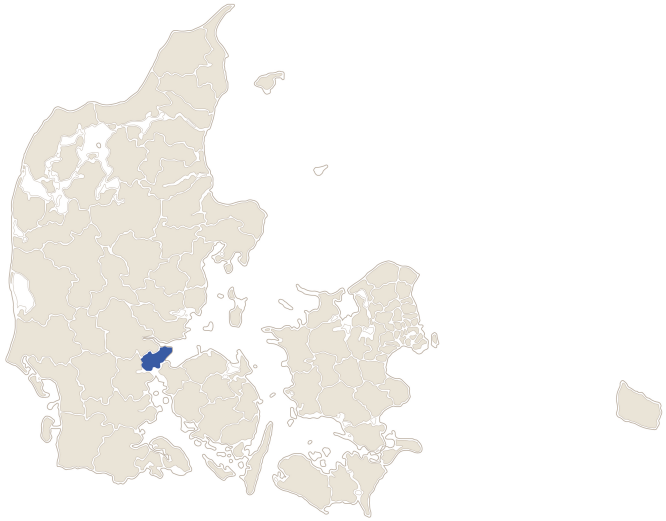

Figure 3.4. Map of Denmark with Fredericia Municipality highlighted in blue.

Known as a European transport hub, Fredericia is well positioned to accommodate a high volume of passenger and freight transport, logistics operations, and commercial enterprises (CAPF, 2020a). Indeed, a number of large companies call Fredericia home and the municipality has an above average number of jobs per inhabitant, with an increase of 3.4% from 2015-2017 (CAPF, 2020a). However, outside commuters comprise roughly half of the municipality's approximate 28,000 jobs, and the number of commuters, along with diesel-based transport, is only expected to increase in the coming years (CAPF, 2020a). Thus, the socio-economic context and demographic trends of the municipality insinuate growth in terms of building developments, transport and traffic volume, as well as environmental impacts and greenhouse gas emissions.

Indeed, the average greenhouse gas emissions per inhabitant in Fredericia Municipality totaled 15.4 tons in 2020 – a far cry from where these individual emissions must be (2.3 tons per person per year by 2030) in order to maintain a 1.5°C planet (Gore, 2021; Region Syddanmark, 2022). Facing this climate conundrum, Fredericia Municipality joined the DK2020 collaboration project in 2019 as one of the pilot projects with a main task to produce a Climate Action Plan for the municipality in alignment with the C40 Climate Action Planning Framework[9] (CAPF, 2020a). Fredericia Municipality subsequently devised a Climate Action Planning Framework (CAPF, 2020a) and corresponding Climate Plan (CP, 2020b) in 2020. These two documents are analyzed below from a degrowth

[9]Built for a global scale, the C40 Cities initiative created the Climate Action Planning Framework for climate plans which provide a pathway to staying within the limits of the Paris Agreement with key components centered around emissions neutrality, resilience to climate hazards, inclusivity and benefits, as well as governance and collaboration (C40 Cities, 2023).

perspective in terms of the the municipality's explicit climate ambitions, the overarching sustainability vision for the future, the principles, strategies, and stakeholders associated with these ambitions and vision, and ultimately how these elements might correspond or contrast with degrowth spatial planning.

Climate Ambitions

The former mayor of Fredericia (who was mayor at the time of these climate documents' publication) concisely articulated the municipality's climate ambitions for the future: "Fredericia wants to make a real difference and implement a green transition....that lives up to the Paris Agreement and become CO_2 neutral in 2050" (CP, 2020b, p. 5). In the near future, this carbon neutral trajectory encompasses a 70% reduction in greenhouse gases by 2030 (CP, 2020b). Fredericia's central location for businesses and transport manifests in an explicit "focus on emissions from companies and transportation in our climate plans" (CAPF, 2020a, p. 10). Along with electricity and heat supply, these sectors account for 95% of the municipality's total emissions, so their prioritization in Fredericia's climate plans is highly logical and imperative from a climate mitigation perspective (CAPF, 2020a).

The municipality also views its work in collaboration with the Region of Southern Denmark and the Triangle Region. In that vein, Fredericia Municipality is a part of the Region of Southern Denmark's development strategy centered on "green transition, climate and resources" and jointly plans for the green transition in the Triangle Region "with a focus on holistic land-use planning in the cities and in the open countryside, and [in collaboration] on specific transition projects that are particularly beneficial to the region" (CAPF, 2020a, p. 7).

All together, the climate ambitions of Fredericia Municipality insinuate that sustainable development and carbon mitigation are possible through green technologies and innovations. Instead of pursuing degrowth, this green growth mitigation strategy posits that economic growth can continue, so long as it is decoupled from commensurate consumption of fossil fuels. This green growth mitigation strategy is antithetical to degrowth, which posits that the decoupling potential of green growth is insufficient at best, if not impossible.

Sustainability Vision

In addition to its climate mitigation efforts, Fredericia Municipality has developed a strategy for sustainable development rooted in the terminology and objectives of the Sustainable Development Goals (SDGs) adopted by the United Nations in 2015 (CAPF, 2020a). This strategic vision, which intends to translate the SDGs into everyday goals, highlights seven interconnected themes which are considered to be integral to attaining sustainable development:

1. Learning, empowerment and communities
2. Equal opportunities for a healthy and happy life
3. Sustainable cities and communities
4. Life in nature
5. Sustainable growth and business development
6. Sustainable supply and responsible consumption

7. The municipality as a sustainability group

These themes are attuned to the objectives of Danish spatial planning to "ensure that social development can take place on a sustainable basis with respect for human living conditions, with the preservation of animal and plant life and ensure increased economic prosperity" (CP, 2020b, p. 40). Sustainability is subsequently characterized for the municipality as a process rather than a rigid checklist (CP, 2020b). With these themes established, Fredericia broadcasts its vision for its future as:

> Towards 2050, it is expected that Fredericia will gradually grow in both population and number of jobs due to the municipality's favorable location. The tracks already laid out for the physical urban development point to a denser city, where emphasis is placed on high liveability. This means good and healthy housing and outdoor areas with less noise and pollution, better access to nearby green areas and nature, and more life in the streets and squares in the city center....As developments are moving even faster than today, both technologically, economically and socially, in an even more globalized and connected world, there is a need for a highly flexible and adaptable society, where both the physical and virtual environment and systems can quickly adapt to a changing everyday life. With higher digitalization and automation of systems, the ongoing sectoral decoupling in utilities has been completed and all workplaces have undergone a green transition, driven by the large manufacturing, energy and transport companies linked in an industrial symbiosis. This has resulted in many new green jobs in Fredericia, partly due to the successful transition of companies that previously contributed significantly to greenhouse gas emissions. The focus on avoiding resource and energy waste, partly driven by higher taxes in this area, also means that homes have become smarter and consumption more sustainable. The transport sector has switched entirely to renewable energy - mainly electricity. Automation has meant that all groups in society will have mobility at their fingertips after an almost full transition to autonomous vehicles and drones (CP, 2020b, p. 44).

Alongside ambitions for increased equity and biodiversity, this strategic vision for sustainable development once again emphasizes green growth – an oxymoron from a degrowth perspective. At the same time, the other themes of the strategic vision and the portrait of a future encompassing common property, enhanced well-being, and increased nature is quite analogous to a potential degrowth future. However, the climate plan documents do not further elaborate upon this particular strategic vision, but instead point to the document 'Fredericia for the SDGs' ['*Fredericia for Verdensmålene*'] for a breakdown of the actions behind the articulated themes.

With this future portrait of Fredericia painted, the Climate Plan outlines several main objectives which this sustainability vision with quantifiable metrics. These objectives are categorized into four themes: transport; heat and electric supply; enterprises; and Fredericia municipality itself. Table 3.7 articulates these objectives as well as their alignment with growth and degrowth principles.

Table 3.7. Targets within transport, heat and electricity supply, enterprises and the municipality as a group (Reductions compared to 2017). Source: adapted from CP, 2020b.

Objectives		**Alignment to green growth**	**Alignment to degrowth**
Transport	20% of cars run on electricity or other renewable energy by 2030 - 100% by 2050.	Expanding the renewable energy sector.	Minimizing fossil fuel use.
	Car ownership in 2030 is at the same level as in 2017. Meaning: - 50% share of trips made by bicycle, walking and public transport in the municipality and 60% in the city center in 2030. - 20% share of bicycle journeys in the municipality in 2030. - 5% share of public transport commuter trips in 2030. - 10% of all commuter car journeys in the municipality made by carpooling by 2030. - Car sharing available within 500 meters in all urban areas with multi-story housing.	Potential for integrated mobility technologies. Growth in the public transport industry.	Utilizing conditions of existing density to promote walkability and liveability in the city center. Highlighting better use of existing infrastructures. Mentioning equality in terms of accessibility and frequency, also in regards to servicing rural areas. Sharing economy services of carpooling.
Heat and Electric Supply	Phasing out the remaining consumption of fossil fuels in TVIS heat (excluding the contribution from waste incineration) in 2030.	Expanding the renewable energy sector.	Minimizing fossil fuel use.
	50% reduction of CO_2 emissions from waste incineration by 2030, 100% reduction by 2050.	Investing in efficiency innovation technologies.	Reducing CO_2 emissions level.
	All oil burners phased out by 2030.	Alternate appliances investment.	Minimizing fossil fuel use.
	Household heat consumption is reduced by 10% in 2030 and 30% in 2050.	Investing in efficiency innovation technologies.	Reducing consumption levels.
Enterprises	30% reduction of CO_2 emissions from the municipality's energy-intensive businesses.	Expanding the renewable energy sector.	Minimizing fossil fuel use.
	85% reduction in the use of fossil fuels for process in the remaining companies and 100% reduction in 2050.	Expanding the renewable energy sector.	Minimizing fossil fuel use.
	Establishment of PtX plant and CO_2 capture.	Technological fix for renewable energy.	Minimizing fossil fuel use.
	40% of trucks and buses run on hydrogen, electricity or other renewable fuels energy in 2030 - 100% in 2050.	Expanding the renewable energy sector.	Minimizing fossil fuel use.
Municipal	CO_2-neutral municipality by 2030.	Municipality as climate leader.	Aligning with ecological limits.

Stakeholders

Fredericia Municipality's CAPF and Climate Plan emphatically underscore the necessity of a diverse range of voices: "The implementation of Fredericia Municipality's climate plan requires efforts from all walks of life. Therefore, the green transition must not become an elitist project for the few" (CP, 2020b, p. 10). The municipality therefore identified citizens (in particular, vulnerable communities), associations, businesses, politicians, and municipal employees as critical stakeholders in collectively defining the future development of the municipality (CAPF, 2020a). To date, these groups have been involved in the development of the CAPF and Climate Plan "through a public consultation, an exhibition, workshops and a city council meeting - a so-called "citizens' dialogue meeting" (CAPF, 2020a, p. 4). In addition, the participation of vulnerable communities was foregrounded through specific invitations for involvement and ambassador engagement.

While citizens and civil society substantially feature in both plans, the most discussed stakeholder pertains to businesses. This is likely a reflection, at least in part, of the significant emissions of these enterprises in Fredericia: "a large part of Fredericia's CO_2 emissions originate to a large extent from the companies' production and activities, and it is therefore crucial for the municipality to get these business actors involved in the work towards climate neutrality by 2050 at the latest" (CAPF, 2020a, p. 5). To stimulate networking and knowledge sharing, the municipality has developed a business network, Energy and Climate Forum, initiated by the municipality's business organization Business Fredericia. This collaborative initiative highlights the considerable role of growth in Fredericia's climate plans:

> The overall objective of the Forum is, based on concrete development and demo projects, to focus on the green transition and thereby reduce CO_2 emissions while at the same time exploiting the business opportunities for growth and development of the sector that lie in this transition, so that Fredericia within the next 5 years positions itself as Denmark's center for energy and climate (CP, 2020b, p. 27).

The positioning of Fredericia Municipality as a leader in terms of the green transition is implicitly framed here as a competitive city characteristic; if the municipality can distinguish itself in its renewable green glory, this will attract more citizens and businesses to fuel more economic green growth.

Climate Principles

While carbon mitigation is cited as the main impetus behind the strategic actions put forth by the plans, several other themes (which might be seen as guiding principles) are visible throughout the plans (CP, 2020b, p. 5). Equity is considered as "a socially equitable distribution of the benefits of interventions by strengthening opportunities for all groups - including those who are limited by, for example, reduced mobility, finances, exclusion, location of their housing, etc" (CP, 2020b, p. 46). The CAPF reiterates this egalitarian principle with an emphasis on climate and health impacts for vulnerable populations (2020b).

The plans underscore the importance of strengthening health by minimizing noise pollution, ameliorating air quality, and lessening social and psychological problems (CAPF, 2020a; CP, 2020b). Additionally, promoting community, fostering close collaboration across sectors, and increasing well-being are key components of the municipality's green transition. In terms of planning for a sustainable city, the Climate Plan illuminates principles for urban densification in the specific form of a dialogue tool for developing context-specific solutions for transforming existing urban areas through reuse and densification projects (2020b). Accordingly, the Climate Plan delineates new development must be appropriately located, centered around mobility, not impair climate adaptation, and minimize urban and citizens' energy consumption (CP, 2020b).

Furthermore, the plans stress the responsibility of the municipality in disseminating knowledge as well as raising awareness and education about sustainable and green urban development (CAPF, 2020a; CP, 2020b). This has an auxiliary purpose of generating an educated labor force for the green transition and beyond (CAPF, 2020a). This economic logic is joined by economic principles of investment and business potential, job growth, and efficiency innovations (CP, 2020b).

Arguably, the top prioritization of climate mitigation indicates the climate crisis as a somewhat singular issue in these climate plans, whereas the degrowth movement highlights the climate crisis as just one of the complex, multi-faceted crises imperiling the globe. Nevertheless, a number of these principles overlap with those of degrowth: well-being, community, collaboration, learning, accessibility, and densification. In particular, the emphasis on equity (including an equitable distribution of benefits) corresponds with the degrowth prioritization of social justice. Intriguingly, the climate plans particularly accentuate the importance of human health in a way that the degrowth spatial planning discourse does not. The economic principles of the climate plans are also completely lacking from the degrowth debate. Given the degrowth skepticism of green growth, this is a rather unsurprising result.

Climate Strategies

To achieve these objectives, the Climate Plan details a total of 53 climate actions which are in various stages of implementation ranging from the pre-project to the execution phase (2020b). While not all of these actions have a quantifiable CO_2 reduction effect, the majority of these measures are featured, at least in part, for their mitigation potential (38 actions). At the same time, the Climate Plan underscores the necessity of more qualitative actions, such as "the education of children in sustainable development" (2020b, p. 12). Moreover, the Climate Plan indicates no actions for climate adaptation as the municipality's adaptation strategy is located in a separate document, but this has not been made public as of this report's writing.

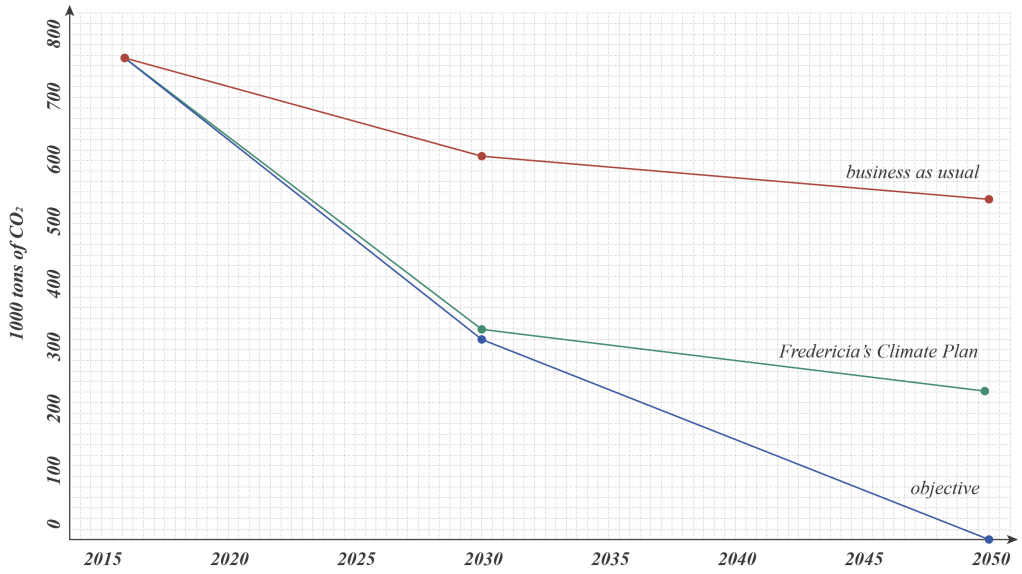

Figure 3.5. Development in CO_2 emissions: business as usual (red line); estimated CO_2 emissions with the Climate Plan (green line); and targets for CO_2 emissions in Fredericia Municipality (blue line). Source: adapted from CAPF, 2020a.

Despite the multitude of articulated climate action, these strategies currently fall short in reaching carbon neutrality for the municipality (see Figure 3.5). This discrepancy (a surplus of 10,000 tons of CO_2 in 2030 and 225,000 tons in 2050) is due to aviation, shipping and energy intensive companies (CAPF, 2020a). There is an added factor of agricultural emissions, which the municipality expects will be partially handled on a national level (CAPF, 2020a). Notwithstanding the current shortcomings in the CAPF's trajectory, the Climate Plan indicates that attaining carbon neutrality by 2050 is still possible, but the uncertainties of the future obscure a singular, straightforward pathway (CP, 2020b).

Table 3.8. Heat and electric supply climate actions. Source: CP, 2020b

Action
Phase out fossil fuels in district heating supply (from Skærbæk Power Station).
Promote the sorting of plastics and other 'fossil' waste.
Promote the sorting of plastics and other 'fossil' waste from other waste suppliers to Energnist.
Phase out oil-fired boilers.
Install photovoltaics on rooftop areas.
Promote energy efficiency in the private housing stock (targeting homeowners).
Promote energy renovation of the private housing stock (targeting rental properties).
Prepare a heating plan.

These heating and electric strategies (Table 3.8) have a clear aim to reduce CO_2 emissions. Indeed, 'green' district heating is already supplying heat to 9 out of 10 properties in the municipality and is expected be close to CO_2 neutral by 2030 – in conjunction with

electricity produced by 100% renewable energy (CP, 2020b). However, these changes are not enough to neutralize emissions; the Climate Plan therefore highlights the need to promote energy retrofits for private buildings (CP, 2020b). In this way, these energy efficiency renovations relate to the degrowth spatial planning strategy 4.2. in Table 3.5 as both imply the ecological retrofitting of existing buildings to minimize their carbon impact.

Table 3.9. Passenger transport climate actions. Source: CP, 2020b.

Action
Develop infrastructure strategy for charging.
Prepare a participatory and holistic cycling action plan.
Improve conditions for cyclists and pedestrians on city center roads.
Develop smart and future-proof parking strategy in the city center. Adapt public transport to actual need.
Make better use of existing rails for public transport.
Develop transport hubs.
Provide free bikes on city buses.
Implement car-sharing schemes.
Deploy carpooling apps.

The mobility strategies of Frederica Municipality (Table 3.9) coalesce to envisage a compact and urbanized future for the municipality (CP, 2020b). The CAPF acknowledges the relatively small mitigating effect of these mobility measures, and also that this is more than compensated for by their significant benefits to human health and equitable accessibility (2020a). Moreover, these strategies promote active and public modes of transportation rather than heavily polluting vehicles, elevate downtown liveability, and advance sharing concepts within mobility (CP, 2020b). These strategies therefore substantially overlap with degrowth strategies for accessible, socially and ecologically oriented mobility infrastructures (strategies 5.1., 5.2., and 5.5. from Table 3.5). The main difference between these two mobility agendas boils down to a different prioritization of technology; degrowth critically assesses the repercussions of electrification and automation whereas the CAPF and Climate Plan embrace green mobility technologies.

Table 3.10. Enterprises climate actions. Source: CP, 2020b.

Action
Pursue Energy and Climate Forum - partnerships for the green transition.
Implement conversion of process energy.
Promote go greener - businesses' shortcut to green transition and circular economy in the Triangle Region.
Provide climate assistance for Small to Medium-sized Enterprises (SMEs).
Establish Power-to-X (PtX)[10] plant in Fredericia (hydrogen factory).
Establish PtX plant Carbon Capture and Utilization.
Develop Fredericia as a multimodal hub.
Promote heavy transport on sustainable fuels.

These business-oriented strategies (Table 3.10) hinge on the green transition to renewable energy sources, made possible by technological innovation (and furthered by partnerships). Emerging technologies like Power-to-X (PtX) are seen as a "key technology" for the municipality to reach carbon neutrality through the conversion of carbon-intensive transportation, traffic, and industrial processes to renewable energy sources (CP, 2020b, p. 28). At the same time, the municipality acknowledges the uncertainty of technological development, and by extension, the tenuousness of calculating future emissions on the basis of "early-stage technologies" (CP, 2020b, p. 28). Proposed solutions such as PtX and carbon capture "may be a step in the right direction, but the technology is still so immature and economically uncertain that this emission is also part of the shortfall in 2050" (CAPF, 2020a, p. 22). While maintaining a critical perspective to an extent, the municipality is still confident in espousing green growth enabling technologies (which are also championed by the national government): "We do not know all the technical solutions that will be available in 2050, and there is therefore great uncertainty associated with calculating future greenhouse gas emissions. However, with the technologies that are known today and which form the basis of the Climate Plan's initiatives, we will largely be able to achieve the target of a 70% reduction by 2030" (CP, 2020b, p. 14). The climate pathway to net-zero CO_2 emissions therefore relies on green technological fixes to execute its most emission-reducing measures. In this strategic subset, there is no real overlap with degrowth strategies.

Table 3.11. Municipal climate actions. Source: CP, 2020b.

Action
Complete energy renovation of municipal buildings.
Purchase green electricity.
Implement data-based energy management.
Reuse bricks from municipal buildings.
Ensure that new buildings meet requirements at the level of DGNB.
Instiall LED street lighting on all road sections by 2023.
Solicit tender for zero-emission city buses in 2023.
Complete transition to green municipal fleet.
Maintain membership in the Partnership for Public Green Procurement [*Partnerskab for Offentlige Grønne Indkøb*] (POGI)[11].
Develop and review ownership strategies.

Although the carbon emissions from Fredericia Municipality as an organization in itself represent a slim minority of emissions (less than 1% of the municipality's total emissions), the municipality has nonetheless set a goal to be CO_2 neutral as a group by 2030 (CAPF, 2020a; CP, 2020b). Accomplished through the above actions (Table 3.11), the municipality aims to be a guiding exemplar for the green transition (CP, 2020b). Strategies for reusing building materials and retrofitting structures to minimize their carbon impact overlap to a certain extent with degrowth proposals for building reuse and retrofit (strategies 2.6. and 4.3. in Tables 3.4 and 3.5 respectively). However, a wide gap remains between the technology-centered actions of Fredericia municipality and the strategies of finity and commoning (refer back to 3.4 and 3.5) advocated for by degrowth spatial planning. Indeed, there is a discrepancy in the end objective expressed in the analyzed plans and in degrowth

spatial planning. Although Fredericia Municipality certainly envisages a wide range of elements factoring in to their green transition, the long-term, primary goal articulated in the CAPF and Climate Plan is to achieve carbon neutrality (while maintaining economic growth). Conversely, degrowth spatial planning posits carbon neutrality as an imperative along the way to a steady-state economy, but the long-term goal is actualizing principles of social justice, respect for planetary boundaries, and lifestyles built around abundant sufficiency and convivial solidarity.

Table 3.12. Waste & recycling climate actions. Source: CP, 2020b.

Action
Increase recycling of food and drink cartons.
Increase recycling of plastics.
Increase recycling of the wood fraction.
Increase recycling of the textile fraction.
Minimize food waste/organic waste.
Expand biogas production from food waste.
Create underground waste loops.
Build new recycling center.

According to the Climate Plan, the citizens of Fredericia Municipality have recycled to a high degree for decades (CP, 2020b). This recycling (and more recently, upcycling) culture has been reinforced with the opening of a new state-of-the-art recycling center in 2021. The waste and recycling actions of the Climate Plan (Table 3.12) thus represent highly actionable measures in the municipality's context. The enhanced waste management and recycling process also contributes to a circular culture and economy for the municipality, which overlaps with the circular imperatives of degrowth. However, these actions suggest a blind spot in degrowth spatial planning proposals; more specific policies for promoting recycling and circular waste management in line with planetary boundaries might enrich the degrowth agenda.

Table 3.13. Planning sustainable cities climate actions. Source: CP, 2020b.

Action
Use the sustainability toolkit throughout the local planning process in all local planning applications.
Further develop 'urban densification principles' aimed at greater emission reduction.
Expand certified sustainable residential areas in order to achieve DGNB certification of local plan for major residential areas.
Create more green surfaces (roofs, trees, parking, etc.).

Although planning sustainable cities could encompass a plethora of actions, the Climate Plan expresses four actions on the municipality's agenda (Table 3.13). The sustainability toolkit refers to two dialogue tools, namely 'The Sustainability Tool' and the 'Principles for urban densification', which are meant to identify sustainable solutions for new development. While the second tool fits with the degrowth notion of densifying in a compact city spatial organization (strategy 1.5. in Table 3.4), the actions propounded by

the municipality presuppose growth in the form of new development as a future certainty. There is no mention of limiting development and construction. On the other hand, the addition of more green surfaces represents an almost universally copacetic strategy which accords with green growth and degrowth agendas alike.

Table 3.14. Learning, empowerment, and communities climate actions. Source: CP, 2020b.

Action
Implement Sustainable Generation educational program.
Develop the Green House.
Hire a climatologist.

This particular subset of climate strategies (Table 3.14) stem from Fredericia Municipality's intent to ensure that all citizens of all ages (as well as associations and businesses) have the proper tools and knowledge to contribute towards a sustainability transition (CP, 2020b). The municipality therefore aims to induce "educational, social and action-oriented communities" through developing initiatives, events, and programs for increasing sustainability knowledge (CP, 2020b, p. 42). This community orientation and reflexive educational outlook are in harmony with degrowth spatial planning's proposal for promoting events and diverse dialogues to raise awareness about the degrowth discourse (see strategy 6.9. in Table 3.5).

Table 3.15. Miscellaneous climate actions. Source: CP, 2020b.

Action
Expand afforestation programs.
Create wetlands.

While the carbon mitigation ambitions and sustainability vision for Fredericia Municipality do not imply rewilding measures, they do feature as somewhat of an addendum in Fredericia's climate actions (Table 3.15). While the Climate Plan highlights that these natural areas sequester carbon, their mitigating properties are accompanied by a myriad of other benefits like providing new habitats, increasing resilience, and improving water and air quality. Here, the role of growth entails enabling biodiversity to flourish as natural spaces are expanded and then safeguarded. These strategies are certainly in alignment with degrowth proposals to renaturalize, create, and preserve natural spaces (such as strategy 2.8. in Table 3.4).

As a whole, the climate actions elucidated in the Climate Plan configure a compelling pathway towards achieving the carbon reduction and sustainability ambitions of Fredericia Municipality. Nonetheless, the aggregation of these actions falls short of realizing carbon neutrality by 2050 (refer back to Figure 3.5). Given the need for more mitigating measures, Fredericia Municipality might engage with the strategies propounded by degrowth spatial planning.

3.2.3 Infusing Degrowth

While green growth serves as the primary answer to climate change in Fredericia Municipality, alternative agendas may also coexist and complement this dominant strategy. Therefore, degrowth spatial planning may develop in parallel with, or even suffuse into, the green growth agenda in a pluriversal pathway towards change (refer back to 3.1.3). Indeed, as Fredericia's green growth climate plan is currently not enough to achieve carbon neutrality by the middle of the century, a more ambitious degrowth direction is necessary to attain Fredericia's climate objectives. The most realistic starting point for a transition towards degrowth spatial planning is, naturally, to start with the reality of contemporary conditions and articulated agendas. Indeed, in the context of Fredericia Municipality, a degrowth spatial planning movement should begin by expanding upon the explicit climate ambitions and sustainability ambition of the municipality.

As aforementioned, a number of the climate actions presented in Fredericia's Climate Plan are conducive to degrowth. Moreover, a number of the principles outlined in Fredericia's future sustainability vision overlap with those of degrowth. For example, the Climate Plan foregrounds the long-term societal benefits of championing sharing economy solutions. Fredericia's prioritization of equity and vulnerable populations corresponds with degrowth's emphasis on social justice and inclusivity. The Climate Plan even suggests that reducing consumption levels as opposed to maintaining consumption levels but in a 'green' way is ecologically optimal: "While implementing measures to ensure carbon-neutral electricity and heat, we should continuously inspire to - and work towards - minimizing energy consumption. It is more climate-friendly not to use energy than it is to produce green energy" (CP, 2020b, p. 16). Undoubtedly, there is a need for a green transition away from detrimental fossil fuels. But the shift towards renewable sources of energy must be accompanied by an explicit dialogue concerning the exploitative, extractive implications of renewables. As the Climate Plan implies in this instance, a transition to renewable energy sources must be complemented by a transition to reduced levels of production and consumption within planetary boundaries. Infusing degrowth into Fredericia's Climate Plan would entail highlighting this respect for ecological limits to a greater extent – as well as detailing caveats to the green transition and green growth.

Imbuing Fredericia's climate actions and sustainability visions with degrowth spatial planning does not require a profound shift from their current policies and agenda; rather, this shift should grow on the foundation of existing tools and strategies. The numerous similarities between the CAPF, Climate Plan, and degrowth spatial planning instead suggest that there is certainly potential for degrowth concepts to influence the municipality's planning. Transitioning to degrowth spatial planning might be understood as a process of addition (and refinement) rather than subtraction. Degrowth concepts and narratives offer an opportunity to enhance the sustainability ambitions and vision of the municipality by separating social and environmental strategies from the growth-imperative. Strategies from degrowth spatial planning that are already harmonious with Fredericia's climate actions may be readily integrated, while more provocative measures might be debated and revised through multi-stakeholder collaboration. All things considered, Fredericia Municipality might begin to incorporate degrowth spatial planning in the following steps:

1. Together with stakeholders, reexamine the future sustainability vision in terms of its reliance on uncertain technological fixes.
2. Educate stakeholders about the discrepancy between carbon neutral ambitions and the emissions trajectory of the current Climate Plan, in conjunction with introducing dialogues about more ambitious strategies which might close this gap.
3. Contextualize degrowth spatial planning future visions, principles, and strategies for the municipality in open collaboration with all stakeholders. Systematically integrate strategies with unambiguous social and environmental objectives.
4. Formulate a timeline for implementing strategies befitting to the municipality's objectives, opportunities, and barriers.
5. Introduce and formalize degrowth spatial planning strategies in the Climate Plan.
6. Continually evaluate and update all strategies and actions in the Climate Plan for their social and ecological value.

As with the broader outline of degrowth spatial planning, these steps towards a green degrowth transition should be further developed and refined in collaboration with a diverse range of voices from Fredericia Municipality. Nevertheless, Fredericia Municipality's CAPF and Climate Plan propound green growth visions and actions, but they also encompass principles and strategies which carve out an opportunity for degrowth spatial planning to take root.

Discussion 4

Any radical imaginary painting a future societal trajectory should undoubtedly be reflected upon and debated; the provocative nature of degrowth prompts a plethora of discussion points. For the sake of brevity, this section will focus on three key issues. To begin, the paucity of built examples of degrowth and degrowth's adjacent movements are considered. Subsequently, the potential myopia or inappropriateness of proposing a broad degrowth solution (especially given the pluriversal perspective posited throughout this thesis) is contemplated. Finally, the skeptical perception of degrowth spatial planning from a normative planning perspective, despite sometimes striking similarities between the two practices, is deliberated.

4.1 One Solution in the Pluriverse

As a discipline which (directly or indirectly) dictates the allocation, distribution, and characteristics of the resources and structures configuring the built environment (with implications that extend across other landscapes and species), planning has a substantial hand in proposing and shaping future imaginaries (Xue, 2022b). Although planners should not (and often lack the authority anyway to) autocratically impose spatial visions, they also must be proactive in defining the boundaries of the profession and practice (Durrant et al., 2023). It is therefore imperative for planning to posit a potential (and ideally, collectively-driven) vision for a better future. Be that as it may, there is also an inverse risk of rigid, uncritical adherence to a singular scenario; many spatialized degrowth proposals presuppose their exhaustive plausibility rather than reflect the nuances of local places (Krähmer, 2022). The endeavor to define a vision for the future is therefore contradictory on a universal scale. This report has accordingly attempted to construct an overview of the contemporary degrowth spatial planning discourse and agenda while still leaving room for contextualization.

As the spatialization of degrowth (and degrowth itself) may follow some shared principles yet still manifest in diverse forms in varying places, "degrowth authors should put less effort in developing hypotheses about universally valid forms and sizes of settlement" (Krähmer, 2022, p. 22). Instead, degrowth spatial planning might adopt a non-universalist agenda and situate itself within a movement of alternatives to development (and decolonized post-development) encompassing movements such as *buen vivir*, *ecological swaraj*, and *ubuntu* (Kaika et al., 2023; Krähmer, 2022). In that sense, degrowth spatial planning might credibly position itself within a pluriverse of alternatives. There is therefore no singular degrowth spatial planning project or universal definition, but a multitude of local interpretations and idiosyncrasies that can cultivate the transition towards a spatial future

aimed at social justice and ecological sustainability.

If degrowth spatial planning proposals should be rooted in and developed from a specific context, the credibility of this report's culminating suggestion for Fredericia Municipality could be questioned as this proposal was developed from a document analysis and not through thorough engagement with local stakeholders. However, recognizing the lack of participatory processes, the unfolding intention of the case study analysis is to delineate an overall frame for the municipality to investigate degrowth spatial planning. From this initial model, further community work and collective reworking can be considered, debated, and executed for the in-depth development and implementation of degrowth spatial planning in Fredericia. Acknowledging the aforementioned pluriversal perspective, the municipality could cultivate degrowth spatial planning in a myriad of manners and methods. Allowing for flexibility and adaptability is a critical concept for degrowth itself and simultaneously reflects the capricious reality of the changing climate (both biologically and atmospherically). All in all, while articulating a degrowth direction is necessary to guide future spatial planning practice and development, this trajectory should be malleable in integrating the diverse heterodoxy of the local community.

4.2 Exemplifying Degrowth Spatial Planning

The third sub-research question of this report endeavors to articulate the strengths, shortcomings, and potential applications of existing examples of degrowth spatial planning. However, the analysis unearthed a substantial lack of built examples of spatialized degrowth, with some interviewees plainly stating that examples of degrowth spatial planning do not exist (Lamker, Interview; Krähmer, Interview; Rydin, Interview). Across the aggregated, analyzed data, certain niche experimentations and theoretical proposals harmonious with degrowth spatial planning are apparent (references to eco-villages, Slow Cities, Transition Towns, and co-housing projects are common), but there is indeed no explicit example of degrowth spatial planning. Naturally, there are therefore no strengths, shortcomings, or applications of tangible degrowth spatial planning practices to evaluate. While varying components of degrowth spatial planning strategies are visible in different places (like the cycling infrastructure in biking cities like Copenhagen and Amsterdam or the environmental retrofits of public housing in Vienna), the absence of a holistic application of degrowth spatial planning indicates both its relative novelty and its impediment in terms of its radical implications.

The genuine lack of a built model constitutes an interesting result; clearly, degrowth spatial planning is currently a niche grounded in theory rather than thoroughly tested in practice. This dearth potentially points to the inability or improbability that degrowth spatial planning can surpass the niche level. This implausibility can be attributed to several key factors: degrowth's incompatibility with the prevailing capitalist-growth regime; the socio-political reluctance towards long-term policy change and institutional reform; the lack of societal awareness or understanding of degrowth spatial planning; the ingrained association of growth with prosperity and the inverse anxiety that degrowth would lead to economic decline, unemployment, and reduced well-being; and ultimately, the limited experimentation and knowledge transfer of degrowth spatial planning. The importance of examples, or building a comprehensive body of empirical evidence, for implementing

degrowth spatial planning should not be overlooked.

Turning towards degrowth adjacent projects therefore holds considerable merit as degrowth spatial planning might grow out of these similar practices. While there are examples of degrowth-inspired initiatives and practices at community or city levels, the scale and scope of such experiments remain limited. More singular or thematic initiatives, such as creating and promoting bike infrastructure, are much more popular but also harder to pinpoint as overtly degrowth spatial planning without an explicit framework. While degrowth spatial planning should emulate the best practices deduced from these policies, a broader concept might serve as a better inspiration for degrowth spatial planning, itself a comprehensive planning concept. To that end, Khmara & Kronenberg evaluate four distinct phenomena of urban development in terms of their similarity to degrowth values (2023). C40 cities indicate a commitment to addressing and mitigating climate change through city climate policy; doughnut cities (a rather new concept) are the manifestation of the doughnut economic model which foregrounds ecological limits and socially just boundaries; shrinking cities denote metropoles with substantial reductions in population and thus economic growth; and Transition Towns encompass a global network of grassroots communities that promote values of resilience, environmental sustainability, social justice, and local economies (Khmara & Kronenberg, 2023). These urban examples might serve as invaluable resources. Further research might therefore investigate how the strengths, shortcomings, and potential applications of these concepts might influence and enrich degrowth spatial planning.

4.3 Renaming Degrowth Spatial Planning

The results of the analysis (Section 3.2) indicate a great degree of similarity (at least in certain aspects like mobility and enhancing quality of life) between degrowth spatial planning and Fredericia's green growth climate plan. Yet, green growth is bursting with political momentum while degrowth remains a contentious niche - if it is indeed on the agenda at all (Arler, Interview). The congruities on paper but dissonance in practice between green growth and degrowth warrant further investigation. If the future envisioned in Fredericia's climate plans is so compatible with degrowth conceptions, why is degrowth (and in extension, degrowth spatial planning) met with such wariness? In all likelihood, degrowth's subversive critique of the growth imperative overshadows any equivalences in terms of values such as equality, environmental sustainability, and prosperous well-being. Notably, the critique of growth is not a blanket censure towards all types of growth but a specific, nuanced proposal to minimize the pursuit of economic growth as measured by GDP in favor of alternative metrics. Increased biodiversity, human and species well-being, and increased equity are other objectives for which growth is desirable from the perspective of the degrowth movement.

Nonetheless, if the normative skepticism towards degrowth largely stems from a semantic misunderstanding, could degrowth be substituted with an alternate term and acquire sweeping success? This report has presented degrowth and post-growth as synonyms, but this equivalence is a point of debate in itself. While some authors might more directly translate the term for degrowth from their native language (for example, the German '*Postwachstum*' becomes post-growth), many academics distinguish between the

two. Liegey & Nelson distinguish post-growth as less provocative and not necessarily anti-capitalist (2020). Rydin articulates degrowth as a specific challenge to growth levels and growth logic while post-growth entails a broader approach that might allow growth in some locations but not others (Interview). Alternatively, post-growth may be understood as an abandonment of the growth discourse all together (Likaj et al., 2022). Nonetheless, other scholars promote the deliberate use of degrowth as an integral component to thwart subsumption: "using 'degrowth' protects advocates from linguistic distortion or co-option by capitalist forces and protects the movement from false and simplistic solutions to achieving environmental sustainability, such as green techno-fixes" (Liegey & Nelson, 2020, p. 11). Simply swapping the term post-growth for degrowth is therefore not an entirely accurate solution, but might hint at a line of inquiry to investigate further.

Returning to Khmara & Kronenberg's assessment of C40 cities, doughnut cities, shrinking cities, and Transition Towns, an alternate concept could also plausibly be integrated with or incorporate degrowth spatial planning (2023). In the authors' estimation, the doughnut city model has the highest potential to facilitate a degrowth transition (Khmara & Kronenberg, 2023). While refuting the capitalist-growth regime and positing human well-being between social and environmental limits in line with degrowth, the straightforward doughnut narrative has the potential to foster widespread understanding and engagement (Khmara & Kronenberg, 2023). Certainly, there is real potential for degrowth spatial planning to manifest through doughnut cities (a model embraced and now implemented by the city of Amsterdam). As doughnut cities have a strong emphasis on the urban, Khmara & Kronenberg suggest that the Transition Towns approach provides flexibility and adaptability geared towards smaller-scale, local communities (2023). The Transition Towns movement thus suggests a potential pathway towards degrowth spatial planning in contexts too small for the doughnut city model. Conversely, C40 and shrinking cities demonstrate limited possibilities for engendering a degrowth transition (Khmara & Kronenberg, 2023). As with many conclusions drawn in this report, the prospective rebranding of degrowth should also be an ongoing, contextualized debate. While defining the overarching principles and strategies for degrowth spatial planning provides a pragmatic place to start, local implementation will always vary according to the socio-spatial reality of the place. Thus, degrowth spatial planning may work in some spaces while a degrowth-doughnut hybrid might better serve others. The clear conclusion of this work is that the unique idiosyncrasies of place will direct and refine the realization of degrowth spatial planning.

Conclusion 5

The report concludes with an overview of avenues for further research as well as a succinct summary of its primary findings.

While the work of integrating degrowth into spatial planning in Fredericia Municipality should undoubtedly entail increased engagement, the process detailed in this report's analysis should be replicated and refined for a plethora of other municipalities. Further research might additionally investigate what the aggregated synopsis of degrowth, doughnut cities, and Transition Towns would look like.

Although the intersection of degrowth and transition theory remains relatively small, the literature is rather uniform in configuring an interstitial trajectory to transition to degrowth. Employing the language of the multi-level perspective, supplanting the capitalist-growth regime entails empowering grassroots niches of degrowth to pervade the mainstream from the bottom-up. Transition management might also serve as a comprehensive model for spatial planning to steer the socio-technical revolution.

Yet, pinning this degrowth spatial planning to one definition is a quixotic endeavor. While precise definitions of degrowth spatial planning and development vary (see Appendix F), they express similar principles of social justice, respecting planetary boundaries, emboldening voluntary simplicity, developing collaborative solidarity, and exploring alternative visions of the good life. They additionally share various commonalities in terms of strategic proposals for compact and clearly defined development, land use centered on commoning, a localized, steady-state economy, housing as a public right, just and active mobility, and a degrowth culture and participatory planning process.

To date, no examples of this degrowth spatial planning exist. As elucidated in the discussion, this paucity indicates the considerable gap between theoretical proposals and empirical experimentations. Notwithstanding the dearth of direct models, degrowth spatial planning may look towards adjacent movements – in particular the doughnut city model on a larger, urban scale and Transition Towns on a smaller, rural scale – for inspiration or potential integration.

Although a number of Danish municipalities have engaged with the (arguably degrowth adjacent) C40 cities movement, contemporary Danish planning practice has yet to substantially consider degrowth as a component of spatial practice (or in any other sector). Instead, the prevailing Danish practice is dominated by a green growth agenda. Carbon neutrality, active and electric mobilities, renewable energy sources, and sustainable development are paired with economic growth as key components of Denmark's green transition.

The climate actions propounded by Fredericia Municipality can be characterized as conducive to degrowth to varying extents. Overlapping strategies include retrofitting existing structures and reusing materials for minimized environmental impact, developing compact, densification principles for urban growth, empowering initiatives, events, and dialogues centered on sustainability education and discourse, and renaturalizing and conserving natural spaces. The mobility strategies in particular align with degrowth proposals for accessible, socially just and environmentally sustainable modes and metabolisms of mobility. As a whole, there is a number of proposals compatible with degrowth. This similarity indicates genuine potential for a transition to degrowth spatial planning.

In the context of Fredericia Municipality, businesses have a heightened relevance in planning processes given their substantial emissions (in addition to the municipal intention to utilize the green transition for business development and economic growth). Citizens, vulnerable communities, associations, and politicians constitute other identified stakeholders relevant to Fredericia's climate ambitions. The municipality, and its employees, undoubtedly serve as an integral actor in local planning. As the stakeholders that have determined Fredericia's current green growth planning position, these actors are all pertinent for discussing and implementing degrowth spatial planning in place of the green growth agenda.

To actualize degrowth spatial planning, these actors might collaboratively begin with several foundational steps. First, the illusory promise of green growth should be investigated in relation to the municipality's current sustainability vision. Then, more ambitious strategies to actually reach net-zero emissions should be debated, meaning degrowth proposals might supplement the current climate plans. In that vein, degrowth spatial planning visions, principles, and strategies should be developed specifically for the municipality. From this established concept, a timeline for implementation should be developed, followed by the introduction and operationalization of the articulated strategies. In practice, these strategies should be continuously monitored, reflected upon, and modified to fit the municipality's future sustainability vision.

More broadly, municipalities might liberate themselves from the hegemonic capital-growth regime through a transition to degrowth spatial planning. This transformation might follow the aforementioned steps to contextualize, refine, and operationalize degrowth spatial planning in a specific place. Ultimately, the future implied by degrowth spatial planning encompasses socially just structures and desirable, convivial built environments all functioning and regenerating within planetary boundaries.

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Degrowth Policies A

Table A.1. Degrowth policies centered around instituting degrowth values. Source: adapted from Cosme et al., 2017.

Promote the transition to a convivial and participatory society

Sector	Top-down policy	Bottom-up policy
Free time	Reduce working hours	Promote shared living spaces (with shared chores)
Voluntary simplicity	Devise new measures to track improvements in social welfare	Promote frugal, downshifted lifestyles; Explore the value of unpaid and informal activity
Democracy and participation	Create caps on political and electoral spending to allow participation changes; Promote regeneration of fundamental democratic institutions to incorporate degrowth-related spatial, temporal, and value dimensions	Decentralize and deepen democratic institutions; Promote alternative political systems and capabilities to provide them; Promote regeneration of fundamental democratic institutions to incorporate degrowth-related spatial, temporal, and value dimensions
Community building and value change	Create funds to finance low economic cost, high welfare public investments; Introduce and incentivize education on ecological limits and sustainability	Strengthen common possession regimes and customary institutions through their formal recognition by external actors; Promote the preservation of ancient knowledge, language and techniques; Invest in the restoration and strengthening of local communities; Introduce and incentivize education on ecological limits and sustainability

Table A.2. Degrowth policies centered around redistribution. Source: adapted from Cosme et al., 2017.

Redistribute income and wealth both within and between countries		
Sector	**Top-down policy**	**Bottom-up policy**
Equity	Promote a fair redistribution of resources through redistributive policies of income and capital assets; Implement redistributive taxation schemes; Encourage the reform of corporate charters and promote new ownership patterns; Promote the shift of costs from labor to capital; Encourage the breaking up of large companies to avoid monopolies; Tax international capital movement; Disincentivize the centralization of banks and financial institutions; Create salary caps; Tighten the control on tax havens	
Global governance	Put a price on environmental and social externalities; Establish common but differentiated responsibilities of developed and developing countries; Prepare for long-term non-growth after the period of growth for developing countries	
Access to goods and services	Improve social security and investment in public goods to guarantee equal access to goods and services; Turn banking into a public service; Create a basic income and job guarantee; Eliminate debt-based money; Promote the recognition and management of common goods	Promote the recognition and management of common goods; Promote community currencies, non-monetary exchange systems and alternative credit institutions
Socio-economic opportunities	Promote work-sharing and job-sharing; Create more employment in key sectors	Encourage small, local enterprises

Table A.3. Degrowth policies centered around anthropogenic environmental impacts. Source: adapted from Cosme et al., 2017.

Reduce the environmental impact of human activities

Sector	Top-down policy	Bottom-up policy
Trade	Promote strong social and environmental provisions in trade agreements; Regulate the tourism industry; Limit trade distances and volume; Create incentives for local production and consumption; Promote voluntary reductions in commerce and trade	Create incentives for local production and consumption; Promote voluntary reductions in commerce and trade
Pollution	Certify organic farming including CO_2 emission reduction goals; Tax environmental externalties; Put caps on all CO_2 emissions; Reduce waste generation	Reduce waste generation
Production	Create regulatory bans for harmful activities and technologies; Introduce simpler technologies; Reduce large-scale, resource-intensive production; Promote organic farming and sustainable agriculture	Promote organic farming and sustainable agriculture
Consumption	Limit/regulate advertising; Tax consumption	Promote changes in consumption patterns; Decrease the number of appliances and goods consumed per household
Resource use	Create caps, taxes and moratoriums on resource use and extraction; Invest in renewable energy; Reduce energy and material consumption; Promote compact city form of urban planning	Reduce energy and material consumption; Promote compact city form of urban planning
Infrastructure	Create a moratorium on new infrastructure; Redirect investments to slow mode transport models	
Ecological conservation	Finance funds and projects for biodiversity conservation; Promote ecosytems restoration; Promote the use of local water sources to reduce dependence on large infrastructures and improve freshwater ecosystems	Promote ecosytems restoration; Promote the use of local water sources to reduce dependence on large infrastructures and improve freshwater ecosystems

Distilled Literature Reviews, in full B

B.1 Degrowth Transition Theory Literature Review

Article title	Authors	Year	Theoretical framework	Role of degrowth	Pathways to change	Transformation strategy	Vertical approach
Future green economies and regional development: a research agenda	Gibbs & O'Neill	2017	Multi-level perspective	Initiatives as niche developments contrary to the dominant regime	*'Stretch and transform'* perspective	Interstitial (*possibility of ruptural*)	Bottom up (*implicit*)
A degrowth transition: Pathways for the degrowth niche to replace the capitalist-growth regime	Vandeventer, Cattaneo & Zografos	2019	Multi-level perspective	Radical niche innovations to the capitalist-growth regime	*Pluriversal* potential pathway for change	Interstitial	Bottom up (*implicit*)
Degrowth in the context of sustainability transitions: In search of a common ground	Khmara & Kronenberg	2020	Multi-level perspective, Multi-phase perspective, co-evolution, and Transition management	Initiatives as grassroots transition experiments	Transition experiments using mixed MLP mechanisms of deepening, broadening and scaling up	Interstitial (mixed mlp mechanisms: deepening, broadening, and scaling-up)	Bottom up (*with an emphasis on top down*)

B.2 Degrowth Spatial Planning Literature Review

Article title	Authors	Year	Definition	Principles	Ambitions	Strategies
Land commodification as a barrier to political and economic agency: A degrowth perspective	Alexander, Burdon & Baumann	2020	Planning with an emphasis on collective, non-market oriented land use and collaborative public housing	Sufficiency-based living, collectivism, commons and commoning, relocalization	Degrowth "must give increased attention to land, housing and property rights as a fundamental enabler and prerequisite to any degrowth transition"	2.1., 2.2., 4.2., 4.5., 4.6., 6.3., 6.4., 6.5.
Planning in and for a post-growth and post-carbon economy	Barry	2019	"focuses on human well-being and other objectives beyond GDP measured economic growth and associated ideas of competitiveness etc., and is also explicitly premised on moving away from a carbon based energy system"	Human well-being and flourishing, prosperity, democracy, creativity, realistically utopian, social justice, respecting ecological limits, "return to the 'public purpose' of planning"	"creating prosperous and flourishing communities where high quality of life is decoupled not just from high carbon use, resource intensity and pollution, but also simplistic and out of date objectives of 'economic growth'"	1.1., 2.7., 5.1., 6.6., 6.7.
The Bauhaus as a designer of transition: Post-growth approaches in East Germany after reunification – between false growth and unwanted non-growth	Brückner	2022	"focuses on creating structures, occasions and opportunities in which creative spaces and creative forces can emerge. It is not about setting a linear course towards a final plan, but about continuously configuring and reconfiguring knowledge, forms and alliances"	Creativity, sustainability, regionality, solidarity, collective action, ecology, flexibility, localization, sufficiency, openness, informality, self-empowerment	"To develop (management) instruments for spatial planning that support growth-critical approaches and open up spaces in which post-growth economies can flourish"	2.8., 2.9., 3.2., 6.8.

Article title	Authors	Year	Definition	Principles	Ambitions	Strategies
Local interpretations of degrowth—actors, arenas and attempts to influence policy	Buhr, Isaksson & Hagbert	2018	Engaging with local population and economic growth discourses	Relocalization	"Locally identifying actors and arenas for degrowth"; questioning increased consumption, urbanization, and fossil fuel dependence	6.5., 6.8., 6.9.
Beyond urban ecomodernism: How can degrowth-aligned spatial practices enhance urban sustainability transformations	De Castro Mazarro, Kaliaden, Wende, et al.	2023	"A form of radical environmentalism strongly opposed to both ecomodernism's 'pragmatic environmentalism' and to more normative sustainable development practicest hat are dependent on continuous growth"	Simplicity, reuse, conviviality, prolonging functionality and upcycling, social and low-tech innovations	Sketching a roadmap as to how spatial practices can serve the principles of degrowth "by examining to what extent sustainability-oriented architectural and urban design interventions may work as a catalyst for pursuing or adopting degrowth principles"	1.1., 1.6., 2.6., 2.8., 4.6., 4.9.
The potential of post-growth planning: re-tooling the planning profession for moving beyond growth	Durrant, Lamker & Rydin	2023	"applicable to an examination of the instruments and tools available to planners as of today, even while its critique is much more fundamental; it strives to transform planning itself through changed practices"	Resource efficiency, reduced pace of development, sufficiency of economic activity, flexibility, ecological limits	"Delink planning policy and practice from the reliance on growth and ever-continuing new urban development to achieve public goals"	1.3., 2.1., 2.2., 3.2., 6.10.

Article title	Authors	Year	Definition	Principles	Ambitions	Strategies
Autonomous re-naturalization of cities in a context of degrowth	Espin	2022	Defined in relation to 'spontaneous re-naturalization' or 'the ecological dynamics of spontaneous plant colonization, and the recovery of nature itself'	Multi-species approach, spontaneous re-naturalization, regreening and vegetating urban spaces, political ecology, relocalization, biodiversity enhancement and conservation	"Urban de-occupation and spontaneous renaturalization are required, as well as the relocalization of food and agriculture"	2.1., 2.7., 2.8., 3.2., 6.3., 6.9.
Interlacing planning and degrowth scholarship: A manifesto for an interdisciplinary alliance	Ferreira & von Schönfeld	2020	"power to deconstruct and disempower the progrowth narratives and stakeholders that have been increasingly influencing public policy in the last decades"	Social welfare, re-evaluating, reconceptualizing, restructuring, redistributing, re-localizing, reducing, re-using and recycling	Avoiding the potential of using degrowth-oriented ideas "to legitimate further pro-growth policies in general, and commodification in particular"	1.1., 1.7., 3.8.
Urbanizing degrowth: Five steps towards a radical spatial degrowth agenda for planning in the face of climate emergency	Kaika, Varvarousis, Demaria, et al.	2023	"there are no 'singular' degrowth spatial practices that can fit and serve equally different geographical and social contexts"	Cosmo-localism, systematic, international comparative work	Historicising debates on (de)growth and urbanisation; Avoiding co-optation or 'greenwashing'; Role of insurgent urban professionals, experts, and institutions linking degrowth agendas with urbanisation practices; Addressing North/South dialectics of degrowth practices	3.2., 6.7., 6.9., 6.10., 6.11.

Article title	Authors	Year	Definition	Principles	Ambitions	Strategies
Performing gaps: The relationship between alternative economies and urban planning in Dortmund	Kettner & Mössner	2022	"alternative initiatives which understand themselves as counterprojects to existing capitalist routines"	Transformative innovation, alternative action, solidarity, civil society self-organisation, creativity, flexibility, sufficiency, social well-being, health and social justice	"Offers opportunities for [diverse thinking, discussions, and understandings of urban planning], such as the reinterpretation of planning instruments, more creative and daring processes and a radical rethinking of the fundamentals of urban planning"	3.2., 6.3., 6.6., 6.8., 6.9., 6.10.
Urban degrowth economics: making cities better places for living, working, and playing	Khmara & Kronenberg	2022	"urban context often... as a place for experimentation with mobility, housing, decommodified eco-living, alternative production and consumption practices"	Autonomy, sufficiency, care, conviviality, compact city, commons and commoning, collective governance, experimentalism, justice, sharing, democracy, learning, relocalization; Urban growth and city size, urban land rent and land use patterns, industrial location, agglomeration and clustering, housing and housing policies, transport	Utilizing the narrative of 'urban degrowth economics' to operationalize degrowth	1.1., 1.2., 1.3., 1.4., 2.1., 2.2., 2.4., 2.5., 3.1., 3.2., 3.3., 3.4., 3.5., 4.1., 4.2., 4.3., 4.4., 4.5., 5.1., 5.2., 5.3., 5.4., 6.1.

Article title	Authors	Year	Definition	Principles	Ambitions	Strategies
Geography matters: Ideas for a degrowth spatial planning paradigm – on Xue and Vansintjan II	Krähmer	2018	"Place-dependent solutions need to be developed that consider context, start from the existing situation and take into account each place's natural and human geography and the function(s) that each human settlement has and/or shall assume"	Bottom-up, spatial quality, spatial justice, accessibility	"In cities, we should transform streets back to public spaces, and think about transforming parking lots into orchards. In rural areas we should fight against new roads and new single-family house settlements and develop positive associations between the rural land and the cities embedded in them"	1.3., 1.5., 1.6., 1.9., 2.6., 2.8., 4.5., 5.1., 5.2., 6.5., 6.9.
Degrowth and the city: Multiscalar strategies for the socio-ecological transformation of space and place	Krähmer	2022	"a relational, [situated, and multi-scalar] conception of space can help to develop consistent strategies for the spatial realisation of this project"	Sufficiency, pluriverse of alternatives, sharing and togetherness, ecological sustainability and social justice, conviviality, social relations, arts, culture, political engagement	"Quantitative but selective reduction of production and consumption as a basic condition for sustainability; social justice through redistribution and the reduction of exploitative relations; well-being and happiness with reduced material wealth"	1.1., 2.2., 2.8., 3.8., 4.2., 4.6., 5.1., 6.3., 6.4.

Article title	Authors	Year	Definition	Principles	Ambitions	Strategies
New roles in collective, growth-independent spatial organisation	Lamker & Dieckhoff	2022	"Integrated, descriptive and explanatory approaches to organise and manage space without growth impulses"	Ecological limits and planetary boundaries, interconnectedness, collective organization of space, justice, courage, institutionally, collectively, and individually responsible planning	"Collective responsibility must be converted into new ways of thinking and acting by courageously leading processes of collective spatial and institutional design"	6.2., 6.3., 6.6.
Degrowth as a territorial-landscape project	Latouche	2016	"Since the landscape is part of the commons, a policy of degrowth will imply the protection of the landscape as well as the search for the common good"	Autonomy, reterritorialization, conscious relocalization, de-industrialization	"The rallying call of degrowth has above all the aim of stressing the urgent need to abandon the senseless growth project as an end in itself"	1.9., 2.3., 2.7.
Degrowth in city planning	Lehtinen	2018	"Prioritize upgrading of daily living conditions by qualitative maintenance and renewal, instead of volume production for economic growth and raising consumption"	Autonomy, independence, environmental citizenship, relocalization, commons and commoning	"Renewal of urban mobility infrastructure, changes in cultures of mobility, housing and consumption"	1.7., 3.8., 5.1., 5.3., 5.4., 6.6., 6.7.

Article title	Authors	Year	Definition	Principles	Ambitions	Strategies
Towards degrowth housing development? Lessons from a scenario-based gaming session in the Oslo region	Mete	2022	"Can contribute to both the environmental and social sustainability of housing for current and future generations"	Equitable (re)distribution, justice, diversity, democracy, limiting gentrification and segregation	"Major neo-liberal traits of growth-based housing development need to be dismantled to promote the degrowth scenario in the housing sector"	4.1., 4.2., 4.3., 4.6., 4.7., 4.8., 4.9.
In quest of implementing degrowth in local urban planning policies	Ruiz-Alejos & Prats	2022	"Needs to be subordinated to overarching social and environmental goals"	Commons and commoning, relocalization, autonomy, alternative lifestyles, sustainable resource use, democracy, sharing, togetherness, intentionality	"Spatialising degrowth attempts to raise planning's potentials as a supportive institution for degrowth transformation within the degrowth debate, while degrowing planning looks for inspiration in degrowth values to reshape urban planning"	2.3., 3.3., 4.3., 5.1., 5.2., 6.2., 6.8., 6.10., 6.11.
The future of planning: Beyond growth dependence	Rydin	2013	"New ways of providing new development through development land trusts and self-build, new modes of providing and managing community assets and new ideas for protecting and improving areas, especially low value areas"	Community-based approach, just sustainability	"Land ownership promoting community management and development, effective community engagement, fiscal measures incentivizing the reuse of empty properties, energy efficiency, and community development"	1.6., 1.7., 2.1., 2.2., 2.4., 3.2., 4.4., 6.2, 6.3., 6.4., 6.5., 6.10.

Article title	Authors	Year	Definition	Principles	Ambitions	Strategies
Towards an urban degrowth: Habitability, finity and polycentric autonomism	Savini	2021	"A regional imaginary of polycentric autonomism, a paradigm of finity in development, and care for habitability as principle of spatial organization"	Habitability, well-being, finity, and polycentric autonomy, regeneration, "r)urbanization", conviviality, sufficiency	"A new approach to land use regulation able to transition towards a self-sufficient urban society and protect land from commodification or dispossession. The ambition is to reimagine normative conceptions of "good land use," beyond property value"	1.3., 2.4., 2.7., 2.8., 2.9., 4.5., 4.6., 4.8., 4.9., 5.2., 5.4., 5.5., 6.3., 6.5.
Uncoupling planning and economic growth: towards post-growth urban principles: an introduction	Savini, Ferreira, & von Schönfeld	2022	"A post-growth agenda requires careful planning if it is to be achieved in a way that avoids dramatic social and ecological costs"	Well-being, biodiversity, sufficiency, care, ecological limits, dwelling, moving, governing, regulating, nurturing, being, envisioning	Non-commodified and ecological dwelling, integrated low-carbon socially and environmentally just mobility, governance for well-being, non growth-oriented regulations, holistic nurturing, ethical and open being	1.9., 2.2., 4.1., 4.2., 4.6., 5.1., 6.2., 6.4., 6.6., 6.8., 6.9., 6.10.

Article title	Authors	Year	Definition	Principles	Ambitions	Strategies
Detroit after bankruptcy: A case of degrowth machine politics	Schindler	2016	"Improve the quality of life for the city's residents in the context of irreversible degrowth"	Reinventing the city, place-(re)making; "willingness to experiment rather than try to 'neoliberalise' the city out of crisis"; "civil society challenge to growth-oriented imperative"	"Stablize local economy, stem population decline and ultimately transform the city"	3.2., 5.1., 6.3. 6.8.
What about the city? Towards an urban post-growth research agenda	Schmid	2022	"Exploring ways to decrease the dependence of urban systems and their inhabitants on market competition, monetary profitability, and financial resources for their proper functioning, subsistence, and self-conception"	Autonomy, decommodification, functioning, subsistence, and self-conception, democracy, diverse thinking, ensity, proximity, and diversity	"Reduce cities' dependence on external growth pressures while minimizing cost externalization and maximizing the transformative impulses of cities beyond place"	6.3., 6.6., 6.9.
'Open localism' – on Xue and Vansintjan III	Schneider & Nelson	2018	"Consists of reorienting the organisation of human communities towards personal relationships of proximity, and reduces that distance that has grown with production for trade and related economic, social and political management"	Open localism, listening, feeling, reducing separation and distance, self-production and self-management	"Open localism rejects the closing of identity (patriotism)....Open localism involves belonging to different open communities with different foci at different scales."	3.3., 5.1., 6.4.

Article title	Authors	Year	Definition	Principles	Ambitions	Strategies
Post-growth geographies	Schulz, Lange, Hülz, et al.	2022	"Adjusting understandings of growth and re-evaluating it, examining the long-term meaningfulness of certain developments and, if necessary, looking for possible alternatives within free social conditions"	Social and solidarity economy, private pursuits, community activities, social prosperity, decommodification of land, democratic participation, adaptability, social cohesion, participation, co-production	"A focus on the common good rather than individual economic profitability"	1.6., 3.2., 3.7., 4.1., 4.6., 6.2., 6.10., 6.12.
Urbanisation as the death of politics: Sketches of degrowth municipalism	Vansintjan	2018	"The politicisation and downscaling of municipalities' social metabolism necessary to achieve a more just society"	Degrowth municipalism, organic citizenship, citification of urban space, openness, collective sufficiency and organic abundance, democracy, "diversity, flexibility, dynamism, solidarity	"An economy of abundance (not scarcity), where public spaces are sites of production, consumption and interaction as essential preconditions for creating and maintaining a dynamic biotic community"	1.7., 3.7., 6.2., 6.6., 6.9., 6.10.
The impacts of spatial planning on degrowth	Wächter	2013	"As a support for renewable energy production, facilitating a more resource-saving lifestyle and creating social capital through more community-based facilities"	Regional influence, democracy, multi-functional settlements, energy-conscious spatial planning	"Multi-functional and redensified settlement structures and neighborhoods to secure less resource intensive living conditions and a minimum of daily needed infrastructure"	1.1., 1.6., 1.8., 2.1., 2.4., 2.6., 2.10., 2.11., 3.3., 4.3., 4.6., 6.1., 6.2., 6.3., 6.9., 6.10.

Article title	Authors	Year	Definition	Principles	Ambitions	Strategies
Co-producing just and sustainable localities: emphasising the role of local authorities in current practices in Germany	Weck & Ritzinger	2021	Co-produces "local development geared to a fairer and more sustainable future"	Collaboration, co-production, participation	Promoting the "agency of local municipalities and their discretionary power to initiate change and transformation" along with "(marginalised) alternative practices"	2.1., 2.6., 3.2., 3.7., 4.1., 4.6., 6.2., 6.5., 6.6., 6.10., 6.12.
Neighbourhoods as the basic module of the global commons	Widmer & Schneider	2018	"Neighbourhoods as the global modules of a new civilisation, a universal project. Far from being hermetically defined spaces, neighbourhoods are like open crossroads, places to meet, arrive and depart"	Strong social relations and communication, not density per se, equitable accessibility, democracy, diversity, self-advocacy, open, receptive engagement, transparency, democratic participation, commons and commoning, just attribution	Focus on neighborhood scale as “the most promising institutions for commons”	1.9., 2.2., 2.3., 3.3., 4.6., 5.1., 6.2., 6.6.
Criteria for post-growth residential development: The example of the city of Zurich	Wohlgemuth & Pütz	2018	"An approach that allows urban development to focus on ensuring future growth is more sustainable, quality-oriented and goes beyond the purely quantitative economic growth paradigm"	Sufficiency, the good life, housing justice, solidarity, alternative, community, shared forms of use, collectivism	"Does not demand that people do without what is necessary but rather assumes that an understanding of what is necessary will lead people to voluntarily do without"	1.5., 1.6., 2.9., 2.10., 3.1., 4.1., 4.2., 4.6., 4.8., 6.2.

Article title	Authors	Year	Definition	Principles	Ambitions	Strategies
Spatialising degrowth, degrowing urban planning	Xue & Kębłowski	2022	"Challenges the logic of urban development" and "focus[es] on limiting growth, promoting sharing and reusing, while tackling head-on socio-spatial inequality"	Non-capitalist, vibrant, resilient, collectivism, decommodification, (re)localism, eco-social justice, autonomy, commons and commoning, conviviality	"'Degrowing planning' has the potential to take degrowth debates and practices beyond localised, small-scale initiatives" to "interpret and translate degrowth to specific geographical, temporal and political contexts"	1.5., 2.3., 2.6., 3.3., 3.7., 4.2., 4.3., 4.6., 4.8., 4.9., 5.1., 5.5., 6.2., 6.3.
Is eco-village/urban village the future of a degrowth society? An urban planner's perspective	Xue	2014	"Has to consider all dimensions of a society in a consistent and systematic way and entails an interdisciplinary approach"	Consistency, social justice and just distribution, environmental sustainability, public participation, strategic translocal alliances	"A multi-scalar strategy combining centralized planning power and local participation is arguably quite necessary, however without at the cost of democracy"	1.2., 1.5., 1.6., 4.6., 4.9., 5.1.
Eco-metropolis planning conditioned by the growth ideology: The case of Greater Copenhagen	Xue	2018	"People oriented rather than profit oriented, prioritise use value of land over exchange value, and seek to improve distributive justice and social equity"	Intergenerational equity, distributive justice, voluntary simplicity, well-being, sufficiency	"The remaking of an attractive urban environment is not for the sake of attracting inward investment and a creative class, but aims at enhancing the liveability of local residents"	2.1., 3.1., 3.4., 6.3.

Article title	Authors	Year	Definition	Principles	Ambitions	Strategies
Space, planning and distribution	Xue	2019	"Environmental sustainability and social justice through addressing privatization and marketization of the housing sector"	Redistribution, compact city, multi-scalar strategies	"Certain degrees of inequality should be considered acceptable in order for people to choose the levels of housing consumption according to their preferences"	1.5., 2.9., 4.2., 6.2., 6.6.
Urban planning and degrowth: a missing dialogue	Xue	2021	"Counters the hegemony of economic growth and facilitates a downscaling of urban physical development that enhances ecological conditions, satisfies basic needs and secures justice at the local and global level, in the short and long term"	Ecological limits, well-being, social justice, radical innovation, redistribution, accessibility	"Degrowing planning has the potential to take degrowth debates and practices beyond localised, small-scale initiatives"	1.3., 1.5., 1.6., 2.3., 2.6., 2.9., 2.11., 3.2., 3.4., 4.1., 4.3., 4.6., 4.9., 5.1., 5.2., 5.3.
A critical realist theory of ideology: Promoting planning as a vanguard of societal transformation	Xue	2022	"Prioritizing eco-efficiency and sufficiency in relation to mobility, housing, and urban spatial development"	Ecological limits, intra- and inter-generational social justice and equity; eco-efficiency, sufficiency	"Critical realist ideology of planning to understand the potential for transitioning to post-growth planning"	1.3., 1.5., 3.3., 3.4., 4.3., 4.9., 5.1., 5.2., 5.3.

Table of Conducted Interviews & Interview Guide C

C.1 Table of Conducted Interviews

Table C.1. Table of conducted interviews.

Interviewee	Professional Background	Medium	Date of Interview
1. Chandrima Mukhopadhyay	AESOP Thematic Group Planning Theories and Practices for the Global South & East Coordinator	Microsoft Teams	19.04.23
2. Yvonne Rydin	Chair of Planning Environment and Public Policy	Recorded Zoom	21.04.23
3. Finn Arler	Planning Professor and Sustainability, Innovation and Policy Researcher	Microsoft Teams	25.04.23
4. Robert Kitzmann	Economic geographer and Academic researcher	Microsoft Teams	25.04.23
5. Anitra Nelson	Activist and Informal Urbanism Researcher	Microsoft Teams	27.04.23
6. Christian Lamker	Sustainable Transformation & Regional Planning Professor	Microsoft Teams	28.04.23
7. Karl Krähmer	Department of Regional and Urban Studies and Planning PhD Researcher	Microsoft Teams	02.05.23

C.2 Interview Guide

Note: Here, degrowth and post-growth can be thought of synonymously.

1. How would you define degrowth spatial planning and development?
    1.1. Are there specific principles/values which correspond with this definition?
    1.2. Are there specific planning strategies which correspond to a degrowth planning practice?
    1.3. Is it possible to universally define degrowth planning practice?
2. Do you see an existing region/city/neighborhood where degrowth planning has been attempted and/or implemented?
    2.1. Who initiated this degrowth planning example?
    2.2. What are the strengths and shortcomings of this(these) built example(s) of degrowth?
    2.3. How might this degrowth planning be potentially applied to other contexts?
3. What would it take to transition towards a degrowth planning practice?
    3.1. What and/or who might generally be understood as an advocate for degrowth spatial planning?
    3.2. What and/or who might generally be understood as a barrier for degrowth spatial planning?
4. Is transitioning to degrowth planning a top-down or bottom-up process?
    4.1. Should degrowth planning emphasize one approach over the other?

Distilled Podcast Analysis D

Table D.1. Distilled notes from 'Becoming a post-growth planner #1: John Barry'.

Contemporary planning	**Barriers to post-growth**	**Strategies and learning**	**Post-growth planning is...**
Public policy shift to neoliberalism has resulted in planning in the Global North largely revolves around facilitating orthodox capitalist growth: attracting foreign and private investment in urban areas and planning for cars. While individual planners might be frustrated, planning as a discipline has lost its original goal for public social benefit.	Ideology and group think – reinforced through planning education – which prefaces economic growth, development and the private sector over spatializing well-being, human flourishing, equality, and inclusion. Structures and systems of mass production, overconsumption, and carbon-intensive transportation largely restrict individual agency.	Interdisciplinary communication and discussion between local politicians, community leaders, trade unions, citizens and academics. Utilizing the institution of planning to change our structures which in turn changes behavior: integrating energy planning and spatial planning, promoting cycling, using nature based solutions, opening up elitist academia to engage with the local community, creating examples of how to live that are viable and attractive alternatives to the current capitalist system. Non-violent direct action by citizens demanding more radical planning in combination with planners challenging development.	"post-capitalist, post-growth, and post-carbon".

Table D.2. Distilled notes from 'Becoming a post-growth planner #2: Benjamin Davy'.

Contemporary planning	**Barriers to post-growth**	**Strategies and learning**	**Post-growth planning is...**
No typical planner as graduates from planning schools can work in very many fields. What's expected from planners: ability to think laterally and be able to use knowledge from several disciplines; be curious about very complex situations and not frightened in the face of complexity; interested in coordinating situations fraught with many conflicts and conflicting interests.	Fetishizing (economic) growth. However, if businesses and companies would run and operate in a way that's conducive to labor and environmental rights, economics can shift to a productive part of planning rather than an enemy.	Critically reflect on what makes COVID-19 different from other (even more devastating) world issues like global hunger or malaria. How can this understanding be used to promote post-growth planning? Yet, as we've learned little from past crises – indeed, unsustainable economic decision making was just reaffirmed — planners might focus on unlearning and emphasizing values of truth, human dignity, justice, and solidarity. Thus, using envisioning practices for creating spaces respectful of human dignity through just distribution of benefits and burdens and enabling opportunities for self-realization, learning, and taking the time and space to reach out to others.	"thinking about quality not quantity".

Table D.3. Distilled notes from 'Becoming a post-growth planner #3: António Ferreira'.

Contemporary planning	**Barriers to post-growth**	**Strategies and learning**	**Post-growth planning is...**
Planners may be categorized in two distinctions: the planner is working on development control by assessing planning applications and issuing planning/-construction permits (generally traditionalist organization); or the planner is engaged in thinking about and envisioning the future and making strategic choices with other actors (generally innovative organization). Most planners fit into the first (monotonous but comforting) category.	Rule-bound individualw (ie, planner) have to follow the pro-growth orientation and logic of established laws and regulations. Thus, on a pragmatic level, planners are hindered by the nature of laws and nature of expectations of job contracts. On a philosophical level, planners are hindered by the dominant ideology of the maximization of experience and of the self where the idea of growth is anchored. However, there is a fundamental problem of worldviews (cosmology) since alternative ethics can't just be forced on people.	Firstly, planners need to challenge the logic of mechanization, computation, and digitalization (thus being critical of smart city, automated transport, innovation-oriented ideas that are oriented towards economic growth, maximization of self through technology). Secondly, planners should promote cycling and active traveling (opportunity for providing labor intensive activity that people are seeking out as engaging practices become obsolete through technological 'progress'). Relatedly, planners should thirdly promote a more labor intensive society in which people can actually engage with and enjoy physical tasks such as gardening or walking (thus providing a glimpse of an alternative ethics beyond maximization of self and experience but finding enjoyment in present engagement instead of infinite expansion).	"a form of planning in which we cease to have dominant ideas directing our thoughts and actions and instead we are open to see the possibilities".

Table D.4. Distilled notes from 'Becoming a post-growth planner #4: Luca Bertolini'.

Contemporary planning	**Barriers to post-growth**	**Strategies and learning**	**Post-growth planning is...**
A planner is anyone who focuses daily efforts on what collective, purposeful interventions can be initiated in places and spaces.	Everything is geared towards achieving economic growth as there is an implicit and explicit assumption that most good things in life are dependent on economic growth. Thus, the main challenge towards post-growth is the lack of imagination and widespread difficulty in envisioning life and businesses independent of growth.	Utilizing envisioning practices: imagining and providing possibilities to experience the good life without economic growth, such as different uses for city streets. Planners can support alternatives with their knowledge and resources: planners in government can navigate the bureaucratic apparatus to find ways to get around regulation or obtain access to subsidies; planners in the property market can help assess finances for degrowth initiatives and facilitate partnerships with parties that are open to experimental/different ways of being together (ie, collective housing); planners embedded in civic society can locate incidences of local citizens, businesses or NGOs promoting degrowth activities and help in the aforementioned ways.	"about the search for the good life".

Table D.5. Distilled notes from 'Becoming a post-growth planner #5: Tine Köhler'.

Contemporary planning	**Barriers to post-growth**	**Strategies and learning**	**Post-growth planning is...**
A planner tries to solve all the land use (might be understood as a mirror of society and its needs) conflicts arising from different demands, issues, needs, and suggestions to design and create a plan for the best use of land.	Most planners are restrained by politics and bounded by legal frameworks. Planning instruments (development plans, land readjustment, urban redevelopment) are all growth-dependent, which hinders planners from thinking in post-growth direction.	Development should be measured according to new indices concerning quality of life and the weighing of sustainability goals. More sufficient land management – encompassing unsealing land, reducing excessive land use, and discarding the mentality of mandatory development – and a new discussion of function away from growth-dependent instruments can achieve regional justice and reduce land consumption. Planners alone can't overcome growth dependency of planning instruments; expanding planning to be more participatory and creative as well as incorporating bottom-up civil society movements can help post-growth planning move from the niche level to the everyday landscape level.	"the only way to get closer to sustainable land use and a sustainable land development, and it is an important part of a post-growth civil society".

Table D.6. Distilled notes from 'Becoming a post-growth planner #6: Robin Boyle'.

Contemporary planning	**Barriers to post-growth**	**Strategies and learning**	**Post-growth planning is...**
Planning in the Global North is shaped by a deep-seated public policy commitment to growth and planners continue to pursue a growth agenda. Planners can integrate themes of degrowth at the margins of their work, but the majority of their work is centered around continuing investment in cities.	Neoliberal growth mechanism has fractured the sense of place and community so that planning has shifted from supporting cities to supporting growth wherever possible. Planners must therefore deconstruct this cultural pursuit of growth to return to a planning about place and community, collectivity and density.	Ensuring post-growth is part of the planning agenda. Recognizing that there are no simple solutions, so change takes time.	"to have an understanding of this spectrum, this connection between the places that have been created over time....Planners don't often make decisions, they encourage, they give information to others to make decisions, we need to remember that. But when they're doing that, they need to remember that there will be implications in the future as change occurs, as the economy and our society moves and changes, what will be the implications for tomorrow".

Table D.7. Distilled notes from 'Becoming a post-growth planner #7: Karl Krähmer'.

Contemporary planning	**Barriers to post-growth**	**Strategies and learning**	**Post-growth planning is...**
Both in sustainable development oriented practices and degrowth discourses, the focus in development, policy, and governance is confined to local boundaries. For the alleged green improvements of some European urban environments, this local focus hides the fact that apparent progress in terms of reducing emissions is actually a reflection of externalized impacts, meaning industries are moved to other places while consumption stays the same (taking externalization into consideration shows that decoupling is impossible).	'Green' practices never becomes systemic change but are instead harmonious with the general perspective of sustainable development and green growth. The example of Copenhagen (often cited as one of the greenest cities) indicates that impacts are internalized: carbon emissions have been reduced locally, but imported goods and services from outside the region means consumptive lifestyles don't change.	Have to recognize the contradiction in thinking consumption can be maintained at current levels, just in a slightly different, 'greener' way; impacts must be thought of and assessed outside of a strictly local scale with consumption-based impacts (which takes into account all the impacts included in local consumption, not just local production). To reduce consumption, planning should create and protect spaces where one can live well without consuming rather than build new consumptive structures. Planners should share best practices and build real alternatives at different scales and in all domains. Planning should also consider how to unbuild unused parts of cities and convert them to natural areas. The aggregations of this post-growth planning also requires politicization to evade co-option by capitalist dynamics and inspire a cultural shift.	"planning that takes limit into consideration, social justice and environmental sustainability at all scales, also beyond the local, and plans for places where good life without having much is possible".

Table D.8. Distilled notes from 'Becoming a post-growth planner #8: Vincent Liegey'.

Contemporary planning	**Barriers to post-growth**	**Strategies and learning**	**Post-growth planning is...**
The new religion of the modern era is thinking in economic terms. Cities and planners are both in search of more and more development.	It's all too easy to turn a blind eye to the human and environmental exploitation behind excess choice; too many unconsciously consume under the illusion of the freedom to consume. Democratic systems are dysfunctional and increasingly distrusted, exposing a gap between the will to have more democracy and defective political institutions.	Seen as a bottom up, grassroots movement, planning might help create an alternative way of life centered around low-tech logistics, food, and transportation. The combination of these community-centered pilot projects can serve as welcoming sites of debate and knowledge sharing to change the mindset of citizens and decolonize growth-driven imaginaries. Planning should openly relocalize our production, economy, democracy, and human interactions and reconstruct local solidarity in dialogue and collaboration with other territories. Planning should implement cooperation with public institutions to rethink public-private property and to give local citizens the opportunity to reappropriate and experiment with self-organized spaces in direct democracy projects.	"Degrowth can simply be substituted by democracy...and I think the main challenge of our society nowadays is really to rethink democracy....We need a type of creativity to involve more and more the people in planning, in how to rethink, how to organize a transition in our society. And we need even more participation, because when you want to implement a type of radical trans-formation...it will create even more conflicts, even more tensions, so the only way to do it is in a non-violent way...to be creative and to involve as much as possible the people in dialogue.... [to] slow down and to invent a type of political [forum] where people could meet and reflect together on where we are and where we want to go together."

Table D.9. Distilled notes from 'Becoming a post-growth planner #9: Le-Lina Kettner & Samuel Mössner'.

Contemporary planning	**Barriers to post-growth**	**Strategies and learning**	**Post-growth planning is...**
Planners still predominantly act on growth-oriented logics and shy away from experimental projects. Traditional planning process is driven by politicians and city administrations in concert with planning agencies from other regions with their own ideas of how any given city should look. Inspired by neoliberalization, the actual intentional of planning to weigh the common good has become equated with growth and planning thus only reacts on issues or pretends to act for the common good.	Post-growth ideas might be easily absorbed by the realities of capitalist dynamics when introduced in experimental initiatives, especially if planners have little to no experience with political interactions and/or activism. It is therefore difficult to address moments of conflict and manage the plethora of roles a planner must play during experimentation.	Post-growth planning should be seen as an experimental tool. Experimentation is an ever-evolving process and critical reflection and debate with a diverse set of actors is an integral component towards refining post-growth interventions. Post-growth planners should know and understand the vocabulary and ideas of local planners and administrations in order to insert post-growth next to them, speak in critical voices to politicians and the public, and evade the depoliticization of post-growth practices.	LLK: "Planning gets a more important role to react *actively*...against [the] growth coalition and reestablish values of livability and justice in our city and the rural areas as well". SM: "constantly working on the hegemonic order that makes our society....post-growth planning is a continuous process, but you always need to try at least to push these borders a little bit further".

Table D.10. Distilled notes from 'Becoming a post-growth planner #10: Yvonne Rydin'.

Contemporary planning	**Barriers to post-growth**	**Strategies and learning**	**Post-growth planning is...**
As neoliberalism has permeated most every discipline, planning has become increasingly less powerful as a state-led, democratic activity. Neoliberalism has led to the erosion of public land and public land banks; planning is now reliant on private land markets for bringing forward sites for development, in turn extending pressure for higher density development perhaps beyond acceptable limits and higher land value uses. Yet out of necessity, the planning profession must confront more adaptive work in response to climate change impacts; this work is aimed at limiting the environmental impacts of growth.	Hegemonic notion in practice planning (and partially in academia) that the solution to most spatial problems is to attract new development, to then negotiate for a share of the profits from that development, and ultimately to trust that the new development subsequently leads to this supposed virtuous cycle of attracting more investment. The inability to envision an attractive alternative to this narrative constitutes a primary challenge to moving communities and stakeholders away from growth-dependency. Post-growth planning is also limited without national policies like universal basic incomes and the presence a of strong welfare state.	Moving away from its current emphasis on managing shiny, new developments to valuing existing, ordinary places and community development, planning must be proactive. Planning should listen to, work with, and support civil society and social economy organizations to provide social and care services outside of market mechanisms (through subsidies, volunteering, gifting, exchange) and foster localized economic activities. This involves providing and protecting public land, ownership, and property for community development and engagement. Planners should help develop national policies and frameworks for fostering local initatives. Planners therefore need to be more economically literate to debate policies about income, investment, and financial support. Planners need to take back and repoliticize their own professional expertise to speak out against growth-driven plans.	"a major challenge, it's a call to arms for rethinking planning systems, policies, and practices. It may be utopian in many of its formulation, but I think it also maintains an essential critique that we can and should learn from".

Table D.11. Distilled notes from 'Becoming a post-growth planner #11: Robert Kitzmann'.

Contemporary planning	**Barriers to post-growth**	**Strategies and learning**	**Post-growth planning is...**
The example of Tempelhofer Feld in Berlin demonstrates the power of the people in terms of the 'rights to the city' debate. At the same time, Berlin is not immune to the privatization and economic incentives of other Global North cities.	In particular to housing exchange projects, most people want to move to a larger property, thereby creating a mismatch in the housing stock and interests. Further, residents are emotionally attached to their neighborhood and furniture.	Citizen action and temporary activities on underused open spaces can be effectively used and encouraged. Housing swap programs should be refined with the inclusion of housing associations and private citizens and incorporate more housing stock for more options. In that vein, planning law and citizens should let go of the notion of housing ownership.	"absolutely necessary to establish a future oriented planning approach that respects planetary boundaries...since post growth planning might be quite new to teaching and research, it's allowed to start quite broad in the beginning to include a lot of different perspectives and then within the next years and decades we have to more narrow it down".

Table D.12. Distilled notes from 'Becoming a post-growth planner #12: Gavin Daly'.

Contemporary planning	**Barriers to post-growth**	**Strategies and learning**	**Post-growth planning is...**
The prevailing narrative around planning centers around how to meet the prevailing economic reality and generate growth through new development and urban regeneration. Opportunity for real change only occurs in crises – the shrinking city phenomenon therefore offers an opportunity for post-growth planning.	Although future scenarios for the world with continually rising emissions is known – and looks grim, the dominant myopic culture surrounding growth prevents us from creating a better society. Articulating post-growth ideas is seen as a risky career move; therefore, when pushed, planners generally fall back to ideas of sustainable development.	Planning research needs more heterodox and critical thinking, while academics need to be more provocative and disseminate different discourses about what alternatives could be to empower planners to use these ideas. Indeed, academics have to be incubators for ideas, translate best practices into policy (potential to take inspiration from shrinking cities as living labs), and push them forward into the mainstream to weaken the prevailing rationality that reinforces growth in planning. At the same time, it's important to not be overly idealistic and think planners can totally change the world – it's a collective effort.	"the decolonization from the ideology of growth....The basic dictionary definition of planning is not about growth, it's about setting a chart and coursing a chart for the future and it's all about...what values we want to impart as a planning profession, whether it's about commodification, development, constant expansion, or it's about quality of life, social values, ecological values, living in common, these ideas about living-making peace with nature".

Table D.13. Distilled notes from 'Becoming a post-growth planner #13: Kim von Schönfeld & Federico Savini'.

Contemporary planning	**Barriers to post-growth**	**Strategies and learning**	**Post-growth planning is...**
Planning has historically almost always had a clear role within a growth-oriented economy. On the one hand, planning is the promotion of the economic growth of cities as engine of economic well-being (popular since 80s) and the other, planning must compensate for the environmental and social problems generated by this growth. A planning agenda for serving public interest has been lost due to decades of neoliberalization and downscaling of planning responsibilities by the state.	Definition of post-growth planning can lead to confusion for planners that tend to see it as a way to down-scale all the good things produced within cities. It is therefore difficult to get planners to the rethink the assumption that growth is necessary.	Planner should return to their roots as proactive activists for the public interest (socially and ecologically marginalized species) and increased well-being. To that end, planners should experiment with alternative mobility systems, food systems, and housing forms which promote a sense of conviviality, collaboration and cooperation rather than competition and commodification. Rather than getting too comfortable in any particular way of thinking, planners should constantly question decisions made and the status quo. Rather than promote one single solution, a diversity of solutions is possible. Challenges can be addressed through education; future planners must be made aware of the environmental and social implications of development and growth.	KvS: "indeed about both environmental and social justice....It's about reconnecting to nature or to everything, other humans...and to the realities of a diverse world rather than one that is streamlined". FS: "a planning practice that is directly focused on well-being and on the reduction of any environmental harm created by cities and spatial development. At the same time, a project of increasing basic human needs through spatial development, so meeting the planetary boundaries while at the same time increasing the well-being of those groups that are at the moment left out of the urban growth machine".

Table D.14. Distilled notes from 'Becoming a post-growth planner #14: Jin Xue'.

Contemporary planning	**Barriers to post-growth**	**Strategies and learning**	**Post-growth planning is...**
Existing planning systems give precedence to economics over ecological and social sustainability. Post-growth sustainable housing forgets to ask fundamental question of whether or not a building is actually necessary.	Current evaluation systems place a fiscal value on nature, thereby commodifying its inherent value. These appraisals are are often very biased as the value of nature is often merely estimated.	Must put environmental sustainability first through reconsidering how we build, redistributing within ecological limits, respecting nature, and recognizing finity. The most straightforward (but unpopular) way to achieve post-growth is through caps on land use, consumption, traffic value, housing development and consumption. The notion of justice must be extended to the process and outcome of planning as well as to other species and future generations. Environmental impact assessments should evaluate the qualitative value of nature. Post-growth can be used as a value framework and theoretical concept to critically analyze shortcomings and limitations in current planning. It can also be used as a strategic tool to repoliticize discussion of futures and a transformative force to revamp the current planning system.	"counter [to] the hegemony of economic growth and facilitates the downscaling of physical development that enhances ecologic conditions, satisfies basic needs, and secures justice at the local and global level in the short and long term".

Table D.15. Distilled notes from 'Becoming a post-growth planner #15: Chandrima Mukhopadhyay'.

Contemporary planning	**Barriers to post-growth**	**Strategies and learning**	**Post-growth planning is...**
Abandoning or ignoring economic growth is not of interest for countries in the Global South as economic growth and development remains a main agenda along with and in order to improve quality of life, reduce inequality, and promote alternate ways of living. Thus, post-growth planning might be seen as still supporting the aspiration for positive development and material wealth in the Global South with an explicit focus on environmental and social prosperity. Planning thus plays a critical role (along with civil society) in the efficient and equitable use of resources across multiple scales, in land use, in transport integration, and in facilitating socio-economic mobility for vulnerable populations.	Restricted mobility and restricted access to employment, health, housing, and education hinders vulnerable populations from prospering.	Planners should understand and prioritize the environment so development is in conjunction *with* nature; moreover, preserving nature should be prioritized over achieving short-term economic growth. From a social perspective, planners should prioritize the (often compromised) needs of marginalized groups first by investing in infrastructure and non-motorized public transport, working with civil societies, and working working at the nexus of formal and informal sectors. Planners might benefit from the use of action-oriented principles: regarding squatting as a legitimate practice and not forbidden urbanization; preferencing repair and adaptive reuse over new construction; widen scope to encapsulate issues such as minimizing displacement; and consolidating successful practices.	"reducing inequality by prioritizing the development and investment for the vulnerable groups, practicing based on new set of vocabularies, and prioritizing environmental ecology".

Table D.16. Distilled notes from 'Becoming a post-growth planner #16: Sofia Greaves'.

Contemporary planning	**Barriers to post-growth**	**Strategies and learning**	**Post-growth planning is...**
Looking at history highlights the repetition of themes that planning has yet to solve: housing issues, environmental degradation, the degradation of quality of place. Patterns also repeat in how we respond to the problems growth creates, indicating that something fundamental is yet to change. Top-down attempts at social engineering have, in the past, placed limits on cultural change while assuming that society and the natural environment are stable and can be controlled through planning.	Planning practitioners and politicians are often paralyzed from acting when an outcome isn't visible or defined.	Even when the best intentions are in mind, its important to avoid top-down definitions and include diverse voices to actively plan with citizens. Utilizing art as an accessible and democratizing research method for distilling concepts, engaging people, and communicating complexity. Art can be used in this way as a vehicle to envisage and communicate post-growth and generate attractive alternative imaginaries crucial to contesting the artistic, flashy visions of the future. Art (and its related spaces) as a practice of conviviality and self-organization can work in connection with post-growth planning as it has economic agency, can bring together community, and can act as a challenging experiment incorporating uncertainty and risk. Planning must be repoliticized and focus on a holistic process rather than a defined outcome.	"about making space for alternatives and experimentation, including artistic communities and practices which have the potential to transform socio-spatial relation".

Table D.17. Distilled notes from 'Becoming a post-growth planner #17: Stephen Leitheiser'.

Contemporary planning	**Barriers to post-growth**	**Strategies and learning**	**Post-growth planning is...**
Emerging dialogue around how to redesign governance (process of coordinating people or institutions to agreed-upon objectives) towards and for the common good. Yet, as there is no universal common good, an aggregate approach of everyone pursuing their own interest arises. This represents a rather undemocratic way of organizing society.	Traditional Western conceptions of governance as maintained by either by the market or by the state hinder the potential of civil society to manage and produce their own projects. Thus, the legitimacy of civil society groups often is questioned by controlling institutions. There is also a lack of imagination and risk-taking at the local level.	Academics can grant legitimacy to civil society initiatives and serve as open spaces of debate and experimentation. Planning should foreground the role of academia in bridging social mobilization and institutional risk-taking. Planning academics should be emboldened to move beyond the idea of neutrality in research (as social research contains value assumptions) to investigate messy and difficult issues while maintaining scientific rigor and integrity along with intentionality. Planning should adopt an open-ended approach not beholden to pre-determined outcomes which allows people and established institutions to take risks outside the norm. The pursuit of the common good should be understood as a vanishing point; in that vein, the idea of commons and the practice of collective commoning opens up new space for much more radically democratic politics.	"a good opening statement. It's the statement that we need to go beyond a sole focus on GDP and a narrow idea of economic growth, but it's also a start or an opening statement because the challenge is where will we move towards? And that's what we need to figure out...in practice or in praxis".

Distilled Interview Notes E

Table E.1. Distilled notes from interview with Chandrima Mukhopadhyay.

Defining	**Strategizing**	**Transitioning**
Conceptualizing degrowth in terms of not prioritizing economic growth is not an option for countries in the Global South. However, this economic growth is about prioritizing development for vulnerable populations around four themes: reducing inequality, improving quality of life, enabling alternative ways of living, and achieving economic development through urbanization that is environmental and ecological.	Highlighting informal sectors and learning from the civil societies that work as a bridge between the government, private sector, and vulnerable populations. Reducing inequality – by investing in intergenerational socio-economic mobility by providing accessibility and infrastructure – at the macro level for long-term economic development. Prioritize technical innovation for a low carbon development pathway allowing for economic activities and aspirations without conventionally associated carbon emissions. Preserve ecological elements rather than urbanizing it. Utilize living labs to experiment with degrowth interventions. **Principles:** Infrastructure, housing, environmental consideration, technical innovation, social justice	Must start from the vulnerable populations and follow the good work of civil society organizations. Planners don't work in isolation; must amass interdisciplinary teams with a variety of actors, including public participation. Both top down and bottom up. Funding is mainly national, but implementation is necessary at the city level. **Barriers:** Large degree of informality, illegality, and private sector lobbying results in a fragmented and unchecked system. Currently, planning struggles to provide basic services - especially in the face of climate change - as rapidly urbanizing areas lack funding, making the provision of public goods more difficult.

Table E.2. Distilled notes from interview with Yvonne Rydin.

Defining	Strategizing	Transitioning
Two rationales of degrowth: 1. Pursuing a steady state - to have a certain amount of economic activity but not to grow in a significant way. Not about reducing levels of economic activity, but how planning could support a steady level of economic activity including urban development as a major economic activity in its own right. 2. Relationship to market forces/signals - developing ways of meeting needs other than through the market by commoning and developing the commons	Potential for inventing strategies based off questioning: what is the level of urban development/activity associated with acceptable level of resource use and how can we maintain that over time? What ceiling do we put on the level of urban development? Strategies which encourage resource efficiency both in construction and operational use of the built environment, lean design, and reduced material use in urban development. **Principles:** Reducing resource use, ecological limits	Re-recognize the role of commercial and economic activity within our societies in a way that prioritizes the provision of goods and services to meet needs and to generate employment rather than drive financialized value. Understanding the necessity of politicians to argue for sufficiency and against growth (rather than putting pressure on planners who are not mandated to be political advocates). Both top down and bottom up. **Barriers:** Current electoral cycle system which drives politicians to make short-term promises rather than prioritize long-term environmental stewardship. Planning practice can't be based on wanting citizens to adopt sufficiency mindsets but must operate with current conditions.

Table E.3. Distilled notes from interview with Finn Arler.

Defining	Strategizing	Transitioning
Concept of degrowth mainly used in terms of economics as the ambition to degrow national economic volume. Difficult to plan based on this ecomonic ambition – planning should focus on degrowth in terms of reducing resource use and environmental impacts.	Divorce individual mobility obsession and replace with more public transport, and bike lanes. Start planning process with using less resources and having less environmental impact - if this has an impact on the economy, so be it. Economic value is a floating concept - redefine values to prioritize environmental values and measure planning with indexes concerning human happiness and environmental impact. Discussing what a viable, suitable future entails/looks like. Cooperation between municipalities, especially as it concerns geographic elements which extend across municipalities. Increasing the amount of green areas and making them more biodiverse. **Principles:** Reduced resource use and environmental impacts, zero climate impacts	Instead of explicitly appointing degrowth as an ambition, setting the agenda as having less impacts on the environment and biodiversity and less resource use. Both top down and bottom up. **Barriers:** Difficulty for municipality to require co2 limits for private citizens, easier to influence municipal structures and infrastructure - not possible to influence all elements outside planning jurisdiction. Demand for social services may outweigh environmental ambitions. Fear that citizens won't understand the concept of degrowth. Paradoxical problem that areas of economic wealth can concentrate on environmental objectives more but have a harder time in building a participatory planning process, whereas smaller areas must prioritize economic concerns. Competition between municipalities.

Table E.4. Distilled notes from interview with Robert Kitzmann.

Defining	Strategizing	Transitioning
Encompasses all planning measures that are suitable/help to reduce the production of physical structures and the consumption of energy, greenhouse gases, resources, etc.	Strategies are currently more theoretical. Counteract financialization and privatization of social spheres like housing, electricity, education, and spatial planning. Counteract neoliberal development by reintroducing power of the state rather than the market. To plan for the environment rather than tax money and economic growth - specifically protecting green spaces in the city. New tax system where cities/municipalities are not reliant on tax money dependent on growth oriented processes. Need for more research, testing, living labs, and discussion of specific measures with existing structures. Specifically to address degrowth planning contradiction between limiting development and addressing the need for (more socially equitable) housing. Reuse of goods and getting rid of planned obsolescence. **Principles:** Reduction of consumption and production, sufficiency, social justice, accessibility, equal distribution of negative aspects as well as redistribution of resources, democratization of decisions within planning process, countering urban sprawl with compact cities	Develop a more open atmosphere and flexible planning regulations for experimentation and discussion. Politicians and planners must embrace and prioritize this experimentation with non-profit, degrowth measures. Get cities and municipalities out of competition mode – revising national tax system for less growth orientation. More broadly, supplanting the current capitalist system with alternative. Top down process encapsulating more public participation and civic society engagement. Both top down and bottom up. Top down implementation of degrowth principles and organization of planning process with democratic bottom up influence - emphasis on bottom up planning with the inclusion of civic society. **Barriers:** The current planning practice and mindset of planners. Strong planning regulations constrain planning to a rigid formula.

Table E.5. Distilled notes from interview with Anitra Nelson.

Defining	Strategizing	Transitioning
There's no silver bullet solution, but degrowth spatial planning entails everyone being planners and being involved with the planning process as an everyday activity. Beyond values of degrowth, our ecological systems have been eroded to such a degree that planning must also be regenerative.	Enabling people at the grassroots level to solve their own (housing) problems themselves within a rational planning framework. Planners given more power to in turn empower and improve local proposals Traffic slowing measures and promoting bike culture Housing cooperatives with degrowth measures such as the reduction of living space per capita and community supported agriculture. Universal autonomy income providing free public services **Principles:** Participation, proactive, regeneration, minimizing energy and matter flows, clear articulation of ambitions, substantive democracy, municipalism model, holistic approach, commons and commoning, lightening footprints, creativity, sharing, cohesion, caring	Planners should use their position to be radical (if possible) Engage architects and industry - lots of different people can be advocates Be consciously and explicitly against money – promoting and multiplying non monetary activities towards a post-money society. Both top down and bottom up. If one has to take the lead, it should be bottom up approaches as people can't be forced to change patterns of overconsumption. Top down manages grassroots pressure in a sensible way and gives over power in sensible ways. **Barriers:** Most of planning policies are top down and standardized, stifling creativity and innovation.

Table E.6. Distilled notes from interview with Christian Lamker.

Defining	Strategizing	Transitioning
Planning where growth (in terms of land use and/or economy) is neither a necessary starting point nor a goal that must be achieved.	Degrowth planning positioned as a critique of the idea that best practices can solve everything – therefore difficult to articulate concrete strategies. Degrowth planning is a different way of acting and must continually be different - there is no moment when degrowth planning is achieved as the ideal end ambition is almost utopian. Can look to niche examples, often from civil societies, of housing and food commons (providing for needs in community-based, solidarity approach), Slow City movements, doughnut economy, and common good economy. Setting clear development limits to contain more construction. **Principles:** Solidarity, community, social, healthy living and working conditions, planetary boundaries, social and environmental justice, openness	Cannot plan the moment where the niche becomes mainstream - no linear strategy to achieve a concrete ambition, but if many cities buy into common good economy and place value in small-scale efforts, maybe a paradigm shift would occur. First, most feasible and cost-efficient step is to reduce energy consumption. Need to develop an ideal visionary and design scenario thinking that shows a convincing positive way to work within ecological limits while also taking realistic actions that are visible and doable in the now. Not only about debate and discussion, but also about action. Allowing for a diversity of roles and demands in dynamic planning. Both top down and bottom up. Bottom up process indicates not only citizen autonomy but also emphasizing the role of planners and relatively well functioning administrative bodies in making radical change. **Barriers:** Implementing democratic decision making with an emphasis of protecting vulnerable populations while still making change that is necessary. Many people think they're isolated in considering degrowth.

Table E.7. Distilled notes from interview with Karl Krähmer.

Defining	Strategizing	Transitioning
Tries to combine staying within ecological limits and the ambition to achieve social justice as well as individual and collective well-being together. Must rethink systems with a much more redistributive and collective logic.	When considering the sustainability of a space, must consider metabolic relations with its outside – relocalization while also considering, accounting for, and analyzing processes of externalization. Sufficiency both in the sense of of not having or consuming too much, but also in the sense of having enough for a good life not at the expense of others. Sharing urban space, sharing housing (cohousing which guarantees accessibility and redistribution), and sharing property (public of commons). In that vein, promoting decommodified, shared spaces and low-carbon mobilities. Reusing existing buildings instead of building new while also reusing spaces in the sense of renaturalizing and leaving some spaces to be naturalized. **Principles:** Social justice, sustainability, well-being, private sufficiency and public luxury, sufficiency, sharing, re-use, inclusivity	Mainstream ideas (specifically with mobility) are already being implemented while the importance of having decommodified forms of housing is also already gaining popularity. Allowing for diversity in cities in their internal dynamics - as a last resort, counterbalance new development in some areas with renaturalization in others. Not bottom up or top down as degrowth can only be realized on a systemic level but a dialectical process of different levels. Strategic pluralism strategy: interstitial (promote small scale initiatives which experiment with doing things differently and promoting social change), symbiotic (collaboration with public institutions), and ruptural (social movements challenging the cultural hegemony) strategies. **Barriers:** The powerful idea of growth as something positive and necessary - difficulty of alternative imaginaries and ideas for using spaces of consumption and production for something different. Interests of powerful companies and rich individuals who don't want to relinquish their wealth (or are not conceived as wanting to). Risk of greenwashing or co-option by capitalism.

Combined Definition of Degrowth Spatial Planning F

Table F.1. Aggregated defintions of degrowth spatial planning

Article Number	Definition
1.	Planning with an emphasis on collective, non-market oriented land use and collaborative public housing
2.	"focuses on human well-being and other objectives beyond GDP measured economic growth and associated ideas of competitiveness etc., and is also explicitly premised on moving away from a carbon based energy system"
3.	"focuses on creating structures, occasions and opportunities in which creative spaces and creative forces can emerge. It is not about setting a linear course towards a final plan, but about continuously configuring and reconfiguring knowledge, forms and alliances"
4.	Engaging with local population and economic growth discourses
5.	"A form of radical environmentalism strongly opposed to both ecomodernism's 'pragmatic environmentalism' and to more normative sustainable development practices that are dependent on continuous growth"
6.	"applicable to an examination of the instruments and tools available to planners as of today, even while its critique is much more fundamental; it strives to transform planning itself through changed practices"
7.	Defined in relation to 'spontaneous re-naturalization' or 'the ecological dynamics of spontaneous plant colonization, and the recovery of nature itself'
8.	"power to deconstruct and disempower the progrowth narratives and stakeholders that have been increasingly influencing public policy in the last decades"
9.	"there are no 'singular' degrowth spatial practices that can fit and serve equally different geographical and social contexts"
10.	"alternative initiatives which understand themselves as counterprojects to existing capitalist routines"
11.	"urban context often... as a place for experimentation with mobility, housing, decommodified eco-living, alternative production and consumption practices"
12.	"Place-dependent solutions need to be developed that consider context, start from the existing situation and take into account each place's natural and human geography and the function(s) that each human settlement has and/or shall assume"
13.	"a relational, [situated, and multi-scalar] conception of space can help to develop consistent strategies for the spatial realisation of this project"

14.	"Integrated, descriptive and explanatory approaches to organise and manage space without growth impulses"
15.	"Since the landscape is part of the commons, a policy of degrowth will imply the protection of the landscape as well as the search for the common good"
16.	"Prioritize upgrading of daily living conditions by qualitative maintenance and renewal, instead of volume production for economic growth and raising consumption"
17.	"Can contribute to both the environmental and social sustainability of housing for current and future generations"
18.	"Needs to be subordinated to overarching social and environmental goals"
19.	"New ways of providing new development through development land trusts and self-build, new modes of providing and managing community assets and new ideas for protecting and improving areas, especially low value areas"
20.	"A regional imaginary of polycentric autonomism, a paradigm of finity in development, and care for habitability as principle of spatial organization"
21.	"A post-growth agenda requires careful planning if it is to be achieved in a way that avoids dramatic social and ecological costs"
22.	"Improve the quality of life for the city's residents in the context of irreversible degrowth"
23.	"Exploring ways to decrease the dependence of urban systems and their inhabitants on market competition, monetary profitability, and financial resources for their proper functioning, subsistence, and self-conception"
24.	"Consists of reorienting the organisation of human communities towards personal relationships of proximity, and reduces that distance that has grown with production for trade and related economic, social and political management"
25.	"Adjusting understandings of growth and re-evaluating it, examining the long-term meaningfulness of certain developments and, if necessary, looking for possible alternatives within free social conditions"
26.	"The politicisation and downscaling of municipalities' social metabolism necessary to achieve a more just society"
27.	"As a support for renewable energy production, facilitating a more resource-saving lifestyle and creating social capital through more community-based facilities"
28.	Co-produces "local development geared to a fairer and more sustainable future"
29.	"Neighbourhoods as the global modules of a new civilisation, a universal project. Far from being hermetically defined spaces, neighbourhoods are like open crossroads, places to meet, arrive and depart"
30.	"An approach that allows urban development to focus on ensuring future growth is more sustainable, quality-oriented and goes beyond the purely quantitative economic growth paradigm"
31.	"Challenges the logic of urban development" and "focus[es] on limiting growth, promoting sharing and reusing, while tackling head-on socio-spatial inequality"
32.	"Has to consider all dimensions of a society in a consistent and systematic way and entails an interdisciplinary approach"
33.	"People oriented rather than profit oriented, prioritise use value of land over exchange value, and seek to improve distributive justice and social equity"
34.	"Environmental sustainability and social justice through addressing privatization and marketization of the housing sector"

35.	"Counters the hegemony of economic growth and facilitates a downscaling of urban physical development that enhances ecological conditions, satisfies basic needs and secures justice at the local and global level, in the short and long term"
36.	"Prioritizing eco-efficiency and sufficiency in relation to mobility, housing, and urban spatial development"

Podcast Number	**Definition**
1.	"Post-growth planning is post-capitalist, post-growth, and post-carbon".
2.	"Post-growth planning is thinking about quality not quantity".
3.	"Post-growth planning is a form of planning in which we cease to have dominant ideas directing our thoughts and actions and instead we are open to see the possibilities".
4.	"Post-growth planning is about the search for the good life".
5.	"Post-growth planning is the only way to get closer to sustainable land use and a sustainable land development, and it is an important part of a post-growth civil society"
6.	"Post-growth planning is to have an understanding of this spectrum, this connection between the places that have been created over time".
7.	"Post-growth planning is planning that takes limit into consideration, social justice and environmental sustainability at all scales, also beyond the local, and plans for places where good life without having much is possible".
8.	"We need a type of creativity to involve more and more the people in planning, in how to rethink, how to organize a transition in our society. And we need even more participation, because when you want to implement a type of radical transformation...it will create even more conflicts, even more tensions, so the only way to do it is in a non-violent way...to be creative and to involve as much as possible the people in dialogue.... [to] slow down and to invent a type of political [forum] where people could meet and reflect together on where we are and where we want to go together".
9.1.	"Planning gets a more important role to react actively...against [the] growth coalition and reestablish values of livability and justice in our city and the rural areas as well".
9.2.	"Post-growth planning is constantly working on the hegemonic order that makes our society....post-growth planning is a continuous process, but you always need to try at least to push these borders a little bit further".
10.	"Post-growth planning is a major challenge, it's a call to arms for rethinking planning systems, policies, and practices. It may be utopian in many of its formulation, but I think it also maintains an essential critique that we can and should learn from".
11.	"Post-growth planning is absolutely necessary to establish a future oriented planning approach that respects planetary boundaries...since post growth planning might be quite new to teaching and research, it's allowed to start quite broad in the beginning to include a lot of different perspectives and then within the next years and decades we have to more narrow it down".
12.	"Post-growth planning is the decolonization from the ideology of growth....The basic dictionary definition of planning is not about growth, it's about setting a chart and coursing a chart for the future and it's all about...what values we want to impart as a planning profession".

13.1.	"Post-growth planning is indeed about both environmental and social justice....It's about reconnecting to nature or to everything, other humans...and to the realities of a diverse world rather than one that is streamlined".
13.2.	"Post-growth planning is a planning practice that is directly focused on well-being and on the reduction of any environmental harm created by cities and spatial development. At the same time, a project of increasing basic human needs through spatial development, so meeting the planetary boundaries while at the same time increasing the well-being of those groups that are at the moment left out of the urban growth machine".
14.	"Post-growth planning is counter [to] the hegemony of economic growth and facilitates the down-scaling of physical development that enhances ecologic conditions, satisfies basic needs, and secures justice at the local and global level in the short and long-term".
15.	"Post-growth planning is reducing inequality by prioritizing the development and investment for the vulnerable groups, practicing based on new set of vocabularies, and prioritizing environmental ecology".
16.	"Post-growth planning is about making space for alternatives and experimentation, including artistic communities and practices which have the potential to transform socio-spatial relation"
17.	"Post-growth planning is a good opening statement. It's the statement that we need to go beyond a sole focus on GDP and a narrow idea of economic growth, but it's also a start or an opening statement because the challenge is where will we move towards? And that's what we need to figure out...in practice or in praxis".

Interview Number	**Definition**
1.	Conceptualizing degrowth in terms of not prioritizing economic growth is not an option for countries in the Global South. However, this economic growth is about prioritizing development for vulnerable populations around four themes: reducing inequality, improving quality of life, enabling alternative ways of living, and achieving economic development through urbanization that is environmental and ecological.
2.	(1) Pursuing a steady state: to have a certain amount of economic activity but not to grow in a significant way and (2) Developing ways of meeting needs other than through the market by commoning and developing the commons.
3.	Concept of degrowth mainly used in terms of economics as the ambition to degrow national economic volume. Difficult to plan based on this ecomonic ambition – planning should focus on degrowth in terms of reducing resource use and environmental impacts.
4.	Encompasses all planning measures that are suitable/help to reduce the production of physical structures and the consumption of energy, greenhouse gases, resources, etc.
5.	There's no silver bullet solution, but degrowth spatial planning entails everyone being planners and being involved with the planning process as an everyday activity. Beyond values of degrowth, our ecological systems have been eroded to such a degree that planning must also be regenerative.
6.	Planning where growth (in terms of land use and/or economy) is neither a necessary starting point nor a goal that must be achieved.
7.	Tries to combine staying within ecological limits and the ambition to achieve social justice as well as individual and collective well-being together. Must rethink systems with a much more redistributive and collective logic.