The image shows a building facade with a prominent copper-colored metal screen featuring a diamond-shaped lattice pattern. Green climbing plants are growing on the screen, particularly on the left and right sides. The building has a reddish-brown upper section. In the foreground, there is a paved sidewalk and a street sign on a pole to the right. The sky is clear and blue.

Nordhavn – A Sustainable City the Copenhagen Way?

Exploring the ambiguity of sustainable urban development



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Nordhavn - A Sustainable City the Copenhagen Way?
Exploring the ambiguity of sustainable urban development

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Abstract

The topic of sustainable development in urban planning is currently framed by two positions. First is an orthodox position which favours economic growth over environmental and social issues of sustainability. And, second, a radical position which advocates for the abolishment of capitalism, structural changes in lifestyles and values to move to a better society based on improved liveability, social cohesion and happiness.

To move beyond this dichotomy, cities have begun to develop green growth planning strategies that aim at combining economic growth with aspects from the radical sustainable vision. The argument here is that growth is not antithetical to sustainability and change can result from within the prevailing forms of industrial states and markets. Based on the case of Nordhavn in Copenhagen, this work explores the political-institutional context, in which the urban sustainability transition unfolds and by which it is shaped, encouraged, or inhibited. The findings indicate that the Nordhavn approach of sustainable urban development is highly influenced by the doctrine of economic growth and focussed on the technological side of environmental sustainability. The Nordhavn case shows that if used appropriately, market tools can be beneficial to encourage sustainability transitions. At the same time, it supports the argument that the green growth approach is not sufficient to produce deeper socioeconomic changes.

This work aims to contribute to the discourse of urban sustainability transitions based on the question of whether green growth approaches can be an adequate approach for overcoming the duality of sustainability visions and market forces.

Personal Motivation

My interest in the Nordhavn project mainly developed through two phases. The first time I visited the place as part of a field trip with the Sustainable Cities class, where most people had a very critical opinion on the ongoing development. This field trip took place in winter and everything seemed cold and grey and empty, not very welcoming. The class was on the same page: this is not how we envision sustainable cities; this is a high-quality district that uses sustainability as a branding to attract people with money. An area that guaranteed Copenhagen a first place in the sustainability competition – without defining sustainability as such. A marketing idea, a form of framing for a place that did not exist yet and still needed to be sold to developers. In that case only a vision could be sold and the vision of a sustainable neighbourhood is promising.

A few months later, I found myself in a different class where people around me were impressed and excited about all the sustainable materials, the infrastructure and the certified buildings in Nordhavn. We started discussing about the true meaning of sustainability and I realised that our personal and professional background and the way we make sense of the world also shapes our approach in urban planning. I took a field trip myself, now everything was green and full of people and the neighbourhood felt inviting and different. I began to wonder whether these opposing opinions that I experienced were part of the process in Nordhavn and what influence they had on the project.

In my opinion, it lies within the responsibility of urban planners to act and develop cities in a way that enhances greater liveability for all citizens and not merely for the elite few. In this sense, greenwashing of sustainable urban development becomes an ethical issue. It became therefore interesting to me to investigate to what extent the sustainable urban development projects are using the concept of sustainability and how it leads the process.



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INTRODUCTION

1. Introduction

Over the last years, cities have emerged as key actors within the global discourse of sustainability transitions (McCormick, Anderberg, Coenen, & Neij, 2013). Cities need to undergo major transformations towards more sustainable, resilient and safe infrastructure and lifestyles. This realisation has led to a growing number of cities all over the world to start integrating sustainability goals into their planning strategies. The potential of cities to transform quite dramatically over relatively short timescales as well as the decision-making powers available to local administrations have pushed urban areas to leading actors of sustainable development (Asquith et al., 2017). However, to this day, no straightforward approach or universal solutions for sustainable urban transitions exists which leaves the process open to planners and policy makers.

The concept of sustainability is characterised by complex contradictions and conflicting goals. Planners face the difficult challenge of navigating between protecting the green city, promoting the economically growing city, and advocating for social equity. Planning for economic growth might be at the cost for environmental and social issues while prioritising planning for the green city might restrain economic growth and social equity (Campbell, 1996). The conflicts of sustainability goals as described by Campbell more than 20 years ago still apply today. Although the main idea of the concept is to integrate the environmental, social and economic dimension equally to reach sustainable development, the process of how to get there is still dominated by conflicts of interest.

The discourse on sustainable urban development has mainly resulted in two opposing positions. On one side stands the orthodox position which is predominantly focused on economic growth, herein called *neo-liberal planning paradigm*. The radical position on the other hand, here referred to as *green and socially just planning paradigm*, advocates for prosperity beyond growth. It is characterised by liveable, inclusive, affordable, diverse, socially just and healthy cities. While the first position is often criticised to be limited in its potential to foster environmental sustainability and neglect wider social issues, the latter one is often perceived as politically unrealistic, especially in current socioeconomic contexts carrying risks of elitism (Geels, McMeekin, Mylan, & Southerton, 2015).

In response to this duality, urban planners and policy makers have begun to develop more comprehensive strategies for greening economies (Bina, 2013). These strategies, based on the concept of green growth, integrate environmental and social aspects to show that economic growth and sustainable cities can go hand in hand. Hence, the green growth position works as a middle way conflating the poles. Figure 1 illustrates the paradigms' understandings of reality, perceptions on growth as well as the different ways that would lead there. Contrary to the neo-liberal position, the green growth concept perceives

sustainability as an economic driver instead of an obstacle and ultimately seeks to combine economic development with environmental protection in a socially just manner (Saiu, 2017).

Table 1. Urban Planning Paradigms. Based on (Xue, Walnum, Aall, & Næss, 2017)

	Neo-Liberal Paradigm	Green Growth	Green and Socially Just Urban Paradigm
Ontology	Economy-centrism	Economy-centrism, anthropocentrism	Anthropocentrism
Change aimed for	Incremental and marginal changes	Change within the system of production and consumption; progress through science & innovation	Transformative change fundamental changes of deep social structures
Perceptions on growth	Growth as priority, negative outcomes are market failures	Growth is not antithetical to sustainability	Long-term growth is neither environmentally possible nor socially desirable
Solutions to environmental problems	Technological innovation and science	Can be found within the context of industrial capitalism without challenging the growth rationality	Eco-efficiency technologies are not sufficient. Downscaling of production and consumption is essential

Although green growth responses have been advocated internationally, their approaches vary significantly and lately have received severe criticism for failing to address the root cause of environmental crises and overlooking issues of social justice and equity (Kenis, A., & Lievens, 2015). However, the main argument against green growth approaches is that they rely heavily on investments in innovation and green technology. This means that the attempt of developing integrated sustainability strategies often results in a slightly altered version of business as usual instead of pushing forward for more radical changes that result in higher sustainability gains (Gibbs & O’Neill, 2017). This means that urban development strategies led by green growth are still dominated by economic growth and market forces, even though they are aiming at integrating the sustainability dimensions equally. This raises the question whether green growth strategies of urban development can be adequate for overcoming the duality of conservative planning approaches and the call for radical sustainability transformations.

1.1. Problem Formulation

This work aims to provoke a meaningful discussion on the concept of sustainability in urban development by providing a deeper understanding of the green growth approach of urban development, its processes and underlying assumptions. What actors, processes and institutional frameworks shape the development becomes an important question. In what way does the duality manifest itself in contradicting policies, visions or strategies? To what

extent are cities aware of the duality? It is only through asking these questions that we can begin to approach the question of how should cities encourage the sustainability transformation. Since these important questions can only be studied in a concrete situation, this work examines the case study of a sustainable urban development project, namely the Nordhavn project in Copenhagen.

Copenhagen's ambition is to be a frontrunner city in terms of sustainability (Københavns Kommune, 2017). Part of this strategy is the large-scale development project in Nordhavn in which the city aims to combine sustainable urban development with economic growth to achieve a high-quality city. The development entails structural changes in several urban domains such as a green mobility strategy including sustainable modes of transport, renewable energy supply and certified sustainable housing. The themes that characterise the new neighbourhood are pre-defined as 'eco-city', 'a vibrant city' or 'a city for everyone'. The development concept has gained international interest and is often referred to as a model for future urban planning.

However, when looking closer at the project, there seems to be a mismatch between the sustainable vision of the district promising an eco-friendly city for everyone, and the market-oriented reality. In particular, Nordhavn has received critique for neglecting social equity and is often referred to as a rich man's ghetto, especially by citizens and the media. Further critique addresses the lacking green infrastructures, especially urban nature. The question remains, whether issues of environmental and social sustainability are taken into account adequately or are overlooked in the project. To what extent is the approach in Nordhavn successful in building a bridge between the green and just urban paradigm and the neo-liberal planning position?

Against this background, this work aims to make underlying key positions and processes of the development project visible. It is further aimed to provoke a meaningful discussion on how the concept of sustainability shapes urban development. The research was led by the following questions:

In what way is the urban development process in Nordhavn shaped by a duality of economic growth versus a green and socially just vision of sustainability?

To what extent can Nordhavn be considered an integrated approach of sustainable development that considers the three pillars of sustainability equally?

How can the Nordhavn case open up the discussion on the concept of sustainable urban development?

1.2. Structure of Report

After laying out the research aim, the first chapter will present the political context in which the development of Nordhavn is taking place, as well as the vision for the sustainable city district and its elements. This is followed by the theories underlying the positions that shape the discourse including neoclassical economic theories, critical urban theory and ecological modernisation. These will be presented and put into relation with the Nordhavn development. Thereafter, the methodology chapter will lay out the research design focussed on the collection of data and how the analysis was carried out. In the analysis section I will present relevant discussions that are part of the sustainability transition and will serve to analyse the processes in Nordhavn. The following chapter presents the findings of the analysis of the interviews, followed by a discussion of the results in relation to the prior presented theories and, ultimately, the conclusion.

1.3. Nordhavn – The Sustainable City of the Future?

In this work, I aim to move between theories and the on-going case study of Nordhavn in Copenhagen in order to relate planning perspectives to the real-life context. Therefore, this section will start out with the political context and sustainability vision of the new urban development project as well as its main components. It will begin by placing Nordhavn in the general sustainability approach of the City of Copenhagen, followed by current research and critiques on the project.

Copenhagen – The Capital of Sustainable Development

The city of Copenhagen has a very ambitious goal for the future: it is striving to become one of the most sustainable cities in the world (Københavns Kommune, 2017). When the Danish Government adopted an action plan to fulfil the Sustainable Development Goals (SDGs) in 2017, Copenhagen decided to go one step further by incorporating the SDGs closely into the city development by further expanding existing strategies and creating new ones. Strategies related to this Action Plan include, for instance, the Climate Plan 2025 or the Action plan for Green Mobility.

Actions such as the reduction of heat consumption, CO² neutral public transport, the cloudburst plan or the use of renewable energy build the base to transform Copenhagen into a city that is upfront on issues with climate and green growth. Copenhagen's main goal is to maintain a liveable and sustainable city. Therefore, it acknowledges that the three dimensions of sustainable development social, economic and environmental are interdependent. Each of the three dimensions constitute crucial and equally important political priorities (Københavns Kommune, 2017, p. 7).

Nordhavn, the lighthouse project of sustainability

With sustainability as its main characteristic, the large-scale development project in Nordhavn builds a lighthouse project of Copenhagen. The new district four kilometres north of the centre of Copenhagen is regarded as Scandinavia's most ambitious urban development project based on its size and the sustainable and holistic approach (By&Havn, 2009). While around 2.500 people have already moved in to the finished parts, it is planned to accommodate a total of 40.000 new inhabitants over the next 40-50 years (By&Havn, n.d.)

Historically, the area was established as an industrial harbour area in the late 1800s and has since then been associated with the port industry. Today, approximately half of the area in Nordhavn is used for port-related industry, while the rest remains unused (By&Havn, 2012). With the change from industrial harbour area to modern city, Nordhavn goes through a

major transformation. The new district is often referred to as an 'urban laboratory' for testing green technologies, implying that gained experiences will be transferable to other contexts. Important elements of the urban development are measures of energy-efficiency, environmental impact reductions and carbon neutrality (Blok, 2013).

The main elements of the development are integrated in the transport strategy, innovative energy solutions and sustainable certification schemes for the individual neighbourhoods and buildings. These will be looked at briefly in the following paragraphs to build the context for the case study of this research. Initially, this work aimed to look at processes within several sectors to overcome the fragmented way of research in sustainability transitions. However, due to the complexity of each individual sector, this study is unable to examine the sustainability transition in a cross-sectoral way. Instead, the study focusses on the implications, processes and positions within the sustainable certification scheme that is used in Nordhavn.

Research on Future Energy Solutions

The Energy strategy for Nordhavn is focussed on research on new technologies and developing consumer-oriented energy supply systems. A major element of the strategy plays the *EnergyLab*, a large-scale research and demonstration project aiming to transform the energy system by developing future energy solutions (EnergyLab, 2014). To contribute to the aim of Copenhagen being CO² neutral by 2025, the EnergyLab includes research on issues such as new forms of district heating, smart energy buildings, EV charging infrastructures or smart network services including user behaviour and demand response. The project aims to show how to obtain sustainable energy flexibilities and energy efficient solutions (e.g. for indoor climate, hot tap water, utilization of surplus heat from supermarket and transport) in combination with integrated and coordinated energy infrastructures (EnergyLab, 2014).

The 5-minute city

Nordhavn's mobility concept revolves around short distances from houses and workplaces to public transport, bike routes, green spaces or commercial premises. The urban fabric is planned in a tight-knit and dense way to foster short distances and therefore less transportation. This approach, called 5-minute principle, aims to ensure that all facilities can be reached in no more than five minutes – including schools, day-care facilities, supermarkets or the metro (By&Havn, 2009). High-quality public transport, good walking and cycling connections supports peoples' choice to use public transport or a bicycle rather than taking the car. By contrast, vehicle traffic is arranged in a way that prioritises vulnerable road-users to ensure good conditions for cyclists and pedestrians and those with disabilities in terms of safety, security and accessibility. The plan includes a traffic distribution of at least

1/3 road space for cyclists, 1/3 for public transport and a maximum of 1/3 for transport by car. To allow for more space for pedestrians and bicycles on the street, cars should preferably be parked in the central carpark, while a smaller portion can be located on the ground (By&Havn, 2009, 2012).

Sustainability Certification

In 2013, the master plan for the Nordhavn area was pre-certified with gold status of the German Sustainable Building Council (DGNB) certification scheme. Nordhavn is the first urban development area to receive gold status for a neighbourhood master plan, the highest certification of the DGNB label which demonstrates a very strong commitment to meeting sustainability objectives (DGNB, n.d.). The certification applies to three selected areas in Nordhavn, namely Trælsthølm, Levantkaj Vest and Sundmolen. The first area that was developed, Århusgade Quarter, is not certified. The three areas are parts of Inner Nordhavn and cover the areas that will be developed in the next phase after Århusgade Quarter (By&Havn, 2018). Although Nordhavn was pre-certified for its masterplan, it also entails that it will be a requirement for all developers in the district to plan their buildings at least to a bronze level. The buildings must therefore meet higher standards than the current building code requires (København Kommune, 2013).

The DGNB system covers the key aspects of sustainable buildings: environmental, economic, sociocultural and functional aspects, technology and processes (Green Building Council Denmark, 2017). By assessing the overall performance of a building or urban district based on several criteria within seven categories, it is aimed at a high sustainability standard that goes beyond the three pillars concept. The assessments are always based on the entire life cycle of a building. Assessed are environmental quality, economic quality, socio-cultural and functional quality, technical quality, process and site quality (ibid).

Nordhavn in current debates and research

Nordhavn has been discussed as a model for future urban planning nationally and internationally. However, it has also been receiving severe scepticism and critique especially from the media and citizens. Since Nordhavn is part of Østerbro district, the Østerbro Local Committee plays an important role. Although the Local Committee generally supports the development project of its northern outskirts, it emphasises the importance of social cohesion and green infrastructures (Københavns Kommune, 2013). In 2017, the Committee published ideas for the development of the neighbourhood based on the ideas of a citizen meeting of Østerbro residents. Priority wishes for the district plan were green oases and trees on the streets as well that Nordhavn develops into a district for the ordinary Copenhagener and not a rich people neighbourhood (Københavns Kommune, 2013, p. 9).

To this day, the Nordhavn development has received little attention in research literature. While there is a growing body of research on sustainable energy supply, district heating and transport planning, no research can be found on the environmental dimension especially focussed on urban nature and climate change as well as the social dimension of sustainability. The limited studies on Nordhavn made the research for this work more difficult and ultimately might limit the level of detail of the project.



**THEORETICAL
FRAMEWORK**

2. Theoretical Framework

The discourse of sustainable urban transitions is widely dominated by two intellectual positions: an orthodox position characterized by economic logics and technological solutions and a system critical position aiming at radical reductions in consumption levels and lifestyle changes (Geels, McMeekin, Mylan, & Southerton, 2015). The recurring dichotomy between the orthodox and system critical position can be found in concepts such as weak and strong sustainability and is often thought to reduce a complex debate to two extreme positions (Geels et al., 2015). Against this background, a third position, based on the theory of ecological modernisation, aims to close the gap by arguing for more substantial changes to aim for sustainable development without overruling the system of capitalism.

The theories presented in this chapter reflect the positions in the discourse of sustainability transitions. Each of the theories have advantages but also shortcomings and weaknesses and highlight different aspects when it comes to discussing the process of sustainability transitions. Therefore, one perspective cannot be adequate to assess sustainable urban transition processes or urban development projects. Instead of choosing one specific, 'right' perspective, we need several lenses to shed light on processes and aspects connected to sustainable urban development that would otherwise stay invisible.

When assessing sustainability transitions or related projects, we need to recognise that the way we look at them is shaped by certain positions and underlying assumptions, epistemologies and the understanding of the concept of sustainability. Planners and policy makers following an orthodox stance towards sustainability will result in a different approach and ambitions than a critical position. Rather than advocating a certain position, I aim to explore the current limitations connected to each of the positions within the urban sustainable development discourse. The Nordhavn case study therefore becomes an instrument to challenge the way how the perspectives on sustainability transitions can shape the outcome and process.

Furthermore, I aim to explore how we can research sustainability transitions in an integrated manner that does not prioritise a certain pillar of the sustainability concept and takes the complexity of the issue adequately into account. I will then move to the question whether it is possible to revise and expand the theory of ecological modernisation as a middle way between the radical positions. If we want the discourse to move away from radical positions focussed on growth or radical changes towards a position based on ecological modernisation, how can the other positions inform the theory and add up to it?

To operationalise these thoughts, the research question has been developed based on the theories. The question how the Nordhavn project is being shaped by the duality of market

forces and visions of sustainability, is based on the two extreme positions. It aims to analyse to what extent the radical positions in the discourse on sustainability transitions are reflected in real life and whether it is aimed to overcome them by choosing a middle way. The following section elaborates on the three positions, presents their underlying theoretical, epistemological and normative assumptions, policy implications and provides critical appraisal. The section starts with neo-liberal urban planning and classical economic theories, followed by critical urban theory and finally the theory of ecological modernisation.

2.1. Neo-liberal urban planning theory

Cities have been shaped by neo-liberal processes and market-oriented policies since the late 1970s (Taşan-Kok, 2012). Globalisation, the increasing mobility of capital and the resulting interurban competition for economic growth led to profound changes in urban planning practices. The resulting urban planning approach with a proactive stance of economic growth was first described as 'urban entrepreneurialism' by Harvey (1989). Motivated by profit maximisation, its primary mechanisms are based on free markets and include deregulation and privatisations. Within urban sustainability transitions, the neo-liberal paradigm builds the business as usual (BAU) approach of cities, aiming at marginal changes that fit in with the economic growth doctrine (Geels et al., 2015).

The epistemology of the neo-liberal urban paradigm can be described as a logical positivist approach using quantitative models or experiments to test propositions and make predictions (Geels et al., 2015). Core values include cost-efficiency and the belief in progress through technology and markets. Furthermore, rationalist business approaches with cost-benefit calculations are central mechanisms in decision making processes. The inherent ideological approach is based on individual interests without an ideal state for society or societal groups but rather the right of each individual to pursue a good life that does not harm others (Wright, 2013).

Conceptualisation of sustainability

Sustainability is mainly perceived as environmental sustainability and understood as a more resource-efficient version of contemporary forms of the status quo, with incremental changes in the organization of production, institutional arrangements or daily life practices (Geels et al., 2015). Hence, regulative policy mechanisms are not aimed for but it is rather looked at how market failures can be corrected. The overarching question here is how eco-innovations can be integrated in the persistent market structures. Does the market call for eco-innovations? What are barriers towards market uptake of green innovations? What are the 'win-win' outcomes in which environmental and economic benefits are achieved?

The neoliberal paradigm in urban planning is following a conservative stance of classical economic theories in which the government's principle role is to correct and avoid market failures (Taşan-Kok, 2012). Much of urban planning is seen as intervening in land markets and negatively impacting the urban economy through bureaucratisation which is aimed to be overcome by deregulation, privatisations and outsourcing (Gleeson, B., & Low, 2000). Planning is therefore understood as a minimalist form of spatial regulation to provide certainty to the market and facilitate economic growth. Although social and environmental issues are becoming more and more important in recent urban development debates, market forces are still predominant and the paradigm shift from planning for capital to planning for society has not taken place so far.

2.2. The Green and Just Urban Paradigm – Critical Urban Theory

The second position which has been labelled earlier in this work as *green and just urban paradigm* represents an umbrella term rather than a homogenous research field based on a clear paradigmatic foundation (Johanisova, Crabtree, & Fraňková, 2013). However, the different approaches share the assumption that the market itself is the central cause for the environmental and social crisis and call for abandoning the capitalist logic as well as for fundamental and revolutionary changes of value systems (Geels et al., 2015). Scholars of the green and just urban paradigm aim to debunk and reconstruct the neo-liberal dogma centred on economic growth (ibid). Epistemologically, these approaches of sustainable urban development often practice critical theory styles, aimed at criticising the mainstream position and giving voice to neglected actors.

The field of critical urban studies was established in the late 1960s and early 1970s through scholars such as Henri Lefebvre, Manuel Castells and David Harvey (Merrifield, 2002). Scholars of critical urban theory perceive capitalism as an anti-human, unsustainable and dysfunctional system (Schor, 2014). Therefore, radical changes within the urban form, transport and energy systems as well as cultural and behavioural changes are advocated. Critical urban theory argues that capitalist cities are not only arenas of commodification but are commodified themselves insofar as their main socio-spatial forms are formed and organised in order to foster profit-making (Brenner & Theodore, 2005). Further, it rejects the technocratic, market-driven and market-oriented forms of urban systems and aims to explore normative questions of power and knowledge in the context of contemporary urban development in a globalising world.

In response to the global environmental crises, the green and just urban paradigm calls for more than new technologies and hard infrastructure changes. Instead, it is focussed on deeper questions about the causes of the global crisis which is considered to be rather systemic including human norms and value systems than purely economic (Brenner & Theodore, 2005). By arguing for fundamental and revolutionary changes of value systems

and underlying processes, the field of critical urban studies goes way beyond the environmental sustainability goals. Issues such as equity, liveability, social cohesion or happiness are idealised. Based on the idea of the 'good' city, it calls for a reflexive attitude towards urban development (Brenner, 2009).

To move away from capitalist structures, the position advocates new forms of business ownership with an emphasis on local and informal economies such as collaborative consumption or self-provisioning (Geels et al., 2015). Environmental and social justice problems should be addressed by changes in the capitalist economic system with alternatives focussing on de-growth, sharing economies and changes in cultural values, moving away from over-consumption (ibid). These ideas aim to challenge the predominant system by asking the question of how to move towards de-growth or sharing economies focussed on mobility services, energy services, recycling or leasing? What role do local grassroots initiatives play? How can small scale interactions be upscaled to contribute to a system change? The critical position disapproves of resource efficiency as a solution because a more efficient use could lead to financial gains resulting in individuals consuming more goods in the end. Therefore, more attention is paid to questions of how consumption patterns can be changed towards sustainable user practices and how down-shifting towards less consumption can be initiated or fostered in practice and everyday life (Geels, 2002).

It assumes that a more democratic, socially just and sustainable form of cities is possible even if dominant institutional arrangements, practices and ideologies are currently suppressing those visions. Putting fairness at its centre, the position is arguing for more equitable distributions of wealth and power. It is thus grounded on an antagonistic relationship to existing urban formations (Brenner, 2009). It opens up the discussion on sustainability transitions by asking in what way the community can be involved and who is benefitting from a sustainability transition. How can the aspect of liveability be integrated? With sustainability understood as a public good, what elements of the transition can or should be open to participative democracy? How can actors be connected more closely in the process of sustainable urban development?

2.3. Ecological Modernisation

The concept of ecological modernisation was developed during the 'optimistic' period of environmental policy-making in the 1980s and emerged from the German environmental debate closely related to the precautionary principle based on prevention rather than cure (M. S. Andersen & Massa, 2007). Ecological modernisation introduced new keywords such as 'win-win solutions' and 'no-regret measures' that replaced the zero-sum game perception of environment versus economic growth and gradually attained a degree of societal consensus, at least in countries such as Sweden, Denmark and Germany (M. S.

Andersen & Massa, 2007; Lundqvist, 2000). To achieve the associated paradigm shift, ecological modernisation relies on the well-known principles of the social market economy on active government intervention and state subsidies for research and development. The ecological modernisation strategy also relies on new strategies and initiatives from within businesses.

The theory of ecological modernisation is based on the idea that the most realistic solution to reach sustainable development is not to stop growth but to aim for substantial changes in socio-technical systems and daily life practices (Geels et al., 2015). One of the key characteristics of the theory is that environmental protection provides a 'positive-sum game' in the sense that continued industrial development is offering the best option for escaping from the ecological crises. Ecological Modernisation therefore stands opposing to critical and Neo-Marxist theories perceiving technological development as being generally problematic pointing to a potential need to stop capitalism to deal with ecological crises (Lundqvist, 2000). While radical sustainability approaches provide general visions and ideas, ecological modernisation is thought to offer practical pathways to avoid the dilemma between the sustainability triangle. It can therefore be located between the conservative neo-liberal position and radical sustainability transformations (see Figure 1).

The main assumption is that in order to build a sustainable economy, we must begin from where we are, with the structures, institutions, modes of production, laws and regulations that we already have. This entails accepting that consumption and materialistic lifestyles are here to stay. However, besides working with existing structures, this includes changes and reforms and in some cases abandoning existing structures to move towards a sustainable economy and society (Barry, 2007). Ecological modernisation not only suggests that the integration of economic development, social welfare and environmental protection is possible but that through this reconciliation synergies will be generated (Gouldson & Murphy, 1996). Challenges are conceived as a driver for change towards a sustainable transition holding the opportunity to generate win-win solutions (Bina, 2013; Oliveira et al., 2013).

Concept of sustainability

The primary focus lies on environmental sustainability, assuming that reconfigured transport, energy, food systems may lower environmental pressures. Ecological modernisation assumes technology, innovation and changes in daily life practices to solve environmental problems (Gibbs & O'Neill, 2017; Roberts & Colwell, 2001). It does not aim to simultaneously solve wider socio-economic problems as such poverty, inequality, or problems in democratic accountability. However, it denies simple causality in transitions. Instead of a single cause or driver, there are processes on multiple dimensions and different levels which link up and reinforce each other.

The position sees the world as dynamic and filled with interacting social groups with beliefs, interests, strategies and resources that respond to each other's behaviour. The multi-actor element in the reconfiguration positions identifies individual actors and groups involved in the transition process and puts emphasis on stakeholder engagement and network building. It becomes important to ask how the actors involved in the process are organised. What kind of groups are involved? Which actors are drivers, which are actively resistant to the sustainability transition? Who steers the process? How are the multiple actors interacting?

Further element of ecological modernisation theory are governance approaches and policy mechanisms. Critical questions point at how policies can foster or hinder change. In what way is pressure being applied on existing systems and practices through policy instruments and regulation? What policies stabilise the existing system? Further, following the idea that sustainability transitions require a mix of policies that may have to change over time, the reconfiguration position puts focus on learning and experimentation. How can governance adapt to changing conditions? What (regulative, cognitive, and normative) rules are shaping the transition?

Epistemologically, ecological modernisation fits with critical realism based on the importance the position attributes to patterns and underlying mechanisms searching for the nature of causation, agency, structure, and relations (Geels et al., 2015). This separates the position from the orthodox neo-liberal paradigm which can be linked more closely to logical positivism.

Ecological Modernisation is often advocated to make the sustainability transition more feasible. It promises that the transition to a more sustainable economy and society do not necessarily mean completely abandoning currently lifestyles and aspirations. It removes the 'anti-growth' argument which is thought to hold back the theoretical development of a positive, modern conceptualisation of green political economy and radical conceptualisations of sustainable development (Barry, 2007).

Shortcomings of the theories

Related to sustainability transitions, the conservative position shows a variety of weaknesses of which mainly three are particularly relevant and apply to this work. First, the neoclassical efficiency perspective on natural and environmental resources tends to neglect the wider systemic limits to economic growth. This means market instruments and information provision can only promise limited sustainability outcomes that will not be sufficient to address the scale and urgency of environmental problems. Second, the theory is primarily based on decisions and actions of individuals while social structures such as routines and habits as well as political structures such as the institutional embeddedness of markets are

neglected. Finally, by only considering the environmental side of sustainability, the conservative position neglects social issues connected to sustainable development and presents a one-dimensional approach that is inadequate for the integrated concept of sustainability.

In the same way, the green and just paradigm of sustainable urban development shows several shortcomings. To begin with, the complexity of approached environmental, economic, political and socio-cultural issues moves the paradigm from being holistic towards a blurry, indistinct position. In contrast to the neo-liberal urban paradigm aiming at economic growth, goals range from biodiversity in cities and quality of life to social cohesion. Hence, it remains an abstract vision towards revolutionary socio-economic systems while offering little in terms of pathways or strategies on scaling up small scale initiatives (Geels et al., 2015). Further, the revolutionary approaches are lacking practiced realities of planning since they are often oriented on macro-level structures far away from real-world issues (Geels et al., 2015). Despite strong advocacy, there is limited evidence of how small-scale alternatives can remedy environmental problems at the scale required. Overall, there is little empirical evidence for the green and just urban paradigm leading towards a feasible and significant sustainability transition (Geels, 2011).

Next to the two extreme positions, also ecological modernisation shows a number of shortcomings. To start with, sustainability is often understood as a more resource-efficient version of contemporary forms of the status quo. Changes might occur rather in an incremental way and do not challenge or undermine the dominance of neoliberal economic growth or consumption economies (Bina, 2013). The question arises whether approaches of ecological modernisation result in a slightly altered version of business as usual, rather than a radical shift to a more sustainable economy (Gibbs & O'Neill, 2017). To this day, little evidence exists that shows fundamental changes that have been made to macro-economic structures and policies (Bulkeley, H., Jordan, A., Perkins, R., & Selin, 2013).

Similar to the critical urban theory, the attempt to find a coherent approach for the conflicting triangle of sustainability resulted in a conceptual fuzziness. Although ecological modernisation aims to present a more practical approach to sustainable development than the visionary approach of critical urban theories, it fails to bundle different, partly contradictory, issues and interests in a coherent way (Fisher & Freudenburg, 2002).

Lastly, the concept is often criticised for being too focussed on the environmental part of sustainability. Ecological modernisation does not show explicit connections to dimensions of developmental and distributional problems. Neither is it concerned with social justice within our own generation (intragenerational justice) nor with social justice between generations (intergenerational justice) (Langhelle, 2007). Although efforts have been made to move

towards green and socially inclusive economies, associated policy measures have been criticised for neglecting issues of social justice and equity (Kenis, A., & Lievens, 2015).



METHODOLOGY

3. Methodology

3.1. Research Design and collection of data

The research of this project is following a case study approach. The urban development project in Nordhavn was chosen as an example for current urban development projects in Scandinavia and Western Europe. It provides a concrete situation that makes the discussion around sustainability transitions visible and tangible. Further, it allows to open up various perspectives and to discuss, criticise and analyse the various complexities of the sustainability discourse.

The case study approach has been an effective method to help understanding the process in a comprehensive way by focusing on the dynamics of the case within its real-life context. In-depth case studies are particularly effective since they allow the researcher to observe details, which otherwise do not become visible (Teegavarapu, Summers, & Mocko, 2009). A case study was therefore the ideal method to generate observable outcomes since the questions of this research are open and interpretative and ongoing processes are assessed. However, one should bear in mind that case studies cannot necessarily be generalised or seen as representative for other cases. They are limited to the boundaries of the issue being studied rather than predicting outcomes of other cases. Further, case studies can suffer from a selection bias (ibid). This research was therefore aimed at insight about the sustainability transition in the Copenhagen context, not at empirical generalisation that can be applied in different contexts.

The methodological approach taken in this study consisted of interviews with key stakeholders. Using semi-structured interviews made it possible for the interviewees to expand on their thoughts and opinions and, therefore, possibly provide profound information that cannot be obtained from non-reactive data such as documents. Interviews with involved stakeholders were chosen as a method as it is an efficient and concentrated way of gathering data, especially to obtain information about a new or unknown field such as sustainability transformations. Further, they are less time consuming than many other methods and provide a quick way to obtain specific information (Bogner et al., 2009). However, one should bear in mind that the obtained data from interviews are not neutral and semi-structured interviews can increase the risk of anecdotal and illustrative information.

Relevant stakeholders were identified through a combination of literature reviews and referrals from actors within the field. Over the course of the research, it turned out to be more difficult to get in contact with main stakeholders than initially assumed. It was aimed to cover a variety of stakeholders with a focus on the housing sector including people with

different academic backgrounds, different interests and levels of power. After identifying relevant stakeholders, a comprehensive interview guide was developed containing interview questions adjusted to each interviewee and the topic of interest. The interview guides can be found in the appendix. The stakeholders chosen for the interviews include policy makers, investors and architecture firms. Table xx gives an overview of the interviewed stakeholders and their current position.

Table 2. Overview of interviewed stakeholders

Person	Stakeholder	Position
Mette Mogensen	Domea – Almene bygge- og boligadministrationer	Project Manager
Anette Walter	By&Havn	Project Manager, DGNB Consultant
Nikolaj Frølund Thomson	WERK Architects	Architect
Lise Pedersen	Copenhagen Municipality	Head of Urban Development North

Policy documents as further data source

In order to assess how institutional frameworks and especially economic growth strategies and visions of the green and just city shape urban development processes, it becomes essential to take different institutional and planning levels into account. Therefore, apart from stakeholder interviews, several official policy documents and strategy papers provided further insights and served as non-reactive data sources. These policy documents had been used to place the data obtained from the interviews in an institutional context. Through the documents, it became possible to assess discrepancies between what was stated in official documents and the processes and conceptions as articulated by the interviewees. The documents presented in the following figure 3 proved to be relevant for the urban development in Nordhavn.



Figure 1. Policy Documents relevant for the Case Study

3.2. Analysis

To organise and analyse the content of interviews, it was found to be beneficial to use predetermined themes which had been developed a priori based on the theoretical framework and the research question. The themes which will be presented in the following section, are grounded in fundamental debates around urban sustainability transitions connected to the three theories used for this research. First, they were used to develop interview guides for each interviewee which be found in the appendix. After conducting the interviews, the themes had been applied in the form of a thematic analysis on the data obtained. The following section will begin with the research design presented in figure 2 followed by the debates connected to urban sustainability transitions as well as the defined themes and their categories. The identified debates will later serve as basis for the discussion of the results.

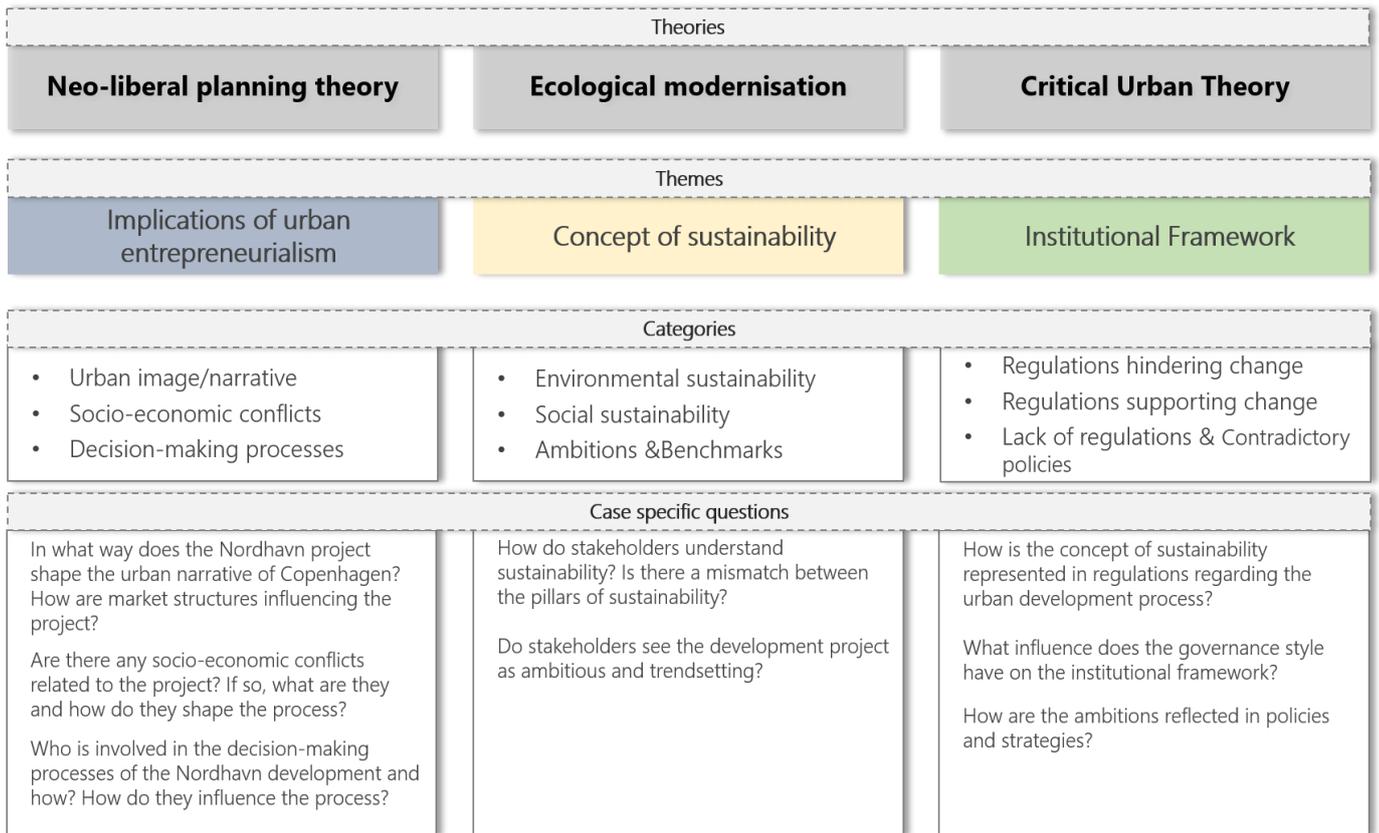


Figure 2. Research Design

Theme 1: Implications of urban entrepreneurialism

One of the debates associated with sustainable urban development is grounded in the emergence of entrepreneurial and competitive styles of urban governance or the neoliberal 'growth first' ideology and its implications on urban sustainability transitions (While, Jonas, & Gibbs, 2004). Here, two major conflicts can be identified. First, together with environmental commitments and the need for social redistributions, the economic growth paradigm becomes a debate on priorities. One of the arguments here is that interurban competition forces cities to assert themselves by promoting a specific urban image and a narrative around it. To compete with others, cities have to pursue clear goals which leads to governance styles of accountability for the performance of meeting certain targets. Further, the limited fiscal opportunities oblige cities to act in a resource-efficient way. In turn, this leaves less room for manoeuvre to govern a city in an environmentally and socially sustainable manner because the priority lies on economic goals.

The second conflict associated with implications of urban entrepreneurialism revolves around the issue of depoliticization, the process of removing political character of decision making (Sager, 2009). Arguments in favour of the entrepreneurial approach see participative policy as inefficient and time-consuming processes that increase bureaucracy. Critics see a risk in planning for capital rather than planning for people. The discussion

opens up the concept of integrated sustainability approaches that promote vertical and horizontal integration across policy sectors and public-private boundaries to create public value via mutually beneficial collaboration processes. By asking what elements should be open for participative democracy, the discussion leads back to ongoing debates of collaborative planning and ultimately, further reaching notions of power and knowledge.

To identify relevant content within the data related to this theme, the focus in the analysis has been based on the urban image or narrative of Copenhagen and the Nordhavn area, issues of decision-making processes as well as prevailing socio-economic conflicts that can be connected to the case. The following questions proved to be helpful:

- In what way is the Nordhavn project shaped by the urban narrative of Copenhagen? In what way does the project contribute to the urban image of Copenhagen?
- Are there any socio-economic conflicts associated with sustainability related to the project? If so, what are they? How do they shape the process?
- What are economic interests of stakeholders that influence the sustainable development by supporting or hindering it?
- What public decision-making processes can be linked to the development in Nordhavn? How do they influence the process?

Theme 2: The concept of sustainability

The second theme used for the analysis is based on debates on the ambiguity of the concept of sustainable development. Despite the term being used for several decades now, sustainability is still a concept that can be interpreted differently (Connelly, 2007). The debate revolving around the concept of sustainability inherits two further conflicts that stand in the context of sustainable urban development.

To begin with, the openness and conceptual fuzziness of the term make it possible to use sustainability issues in a way that reflects or prioritises certain stakeholder interests (Gibson, Holtz, Tansey, Whitelaw, & Hassan, 2005). This debate can be associated with neoliberal planning theory advocating effective styles of governing and therefore prioritising stakeholders with economic interests. It can further be associated with critical urban theory pleading for more social equity and democratic forms of cities that include all groups of citizens. This debate revolves around the mindset or worldview of decision-makers and their understanding of sustainability as well as their ambitions in governance styles.

Next to the understanding of sustainability, the focus on environmental and material issues of sustainable development presents a further debate. Rooted in the assumption of progress through technology in the theory of ecological modernisation, urban strategies predominantly aim for pathways of low-carbon development or are focussing on climate

change adaptation (Langhelle, 2007). These technocentric approaches focus on technologically solvable problems and lead further discussions away from an integrated sustainability approach that includes all three pillars of the concept. Ultimately, the technocentric approach leads back to the entrepreneurial stance of how to integrate eco-innovations in the market or how to generate win-win solutions. Ecological modernisation theory argues for practical win-win solutions that could result in eco-innovations that could protect the status quo as in the neo-liberal position.

The following questions based on the concept of environmental sustainability and social sustainability as well stakeholder's ambitions helped identify relevant content within the data related to this theme:

- What are stakeholders' understanding of the concept of sustainability? Is there a focus on a particular sustainability issue? Is there a mismatch between the sustainability goals? How are social issues perceived? How is environmental sustainability understood?
- Do stakeholders see the development project in Nordhavn as ambitious and trendsetting?

Theme 3: The Institutional Framework

The third theme integrates the debates identified within the first and second theme with the institutional framework of sustainability transitions. It includes problems and goals of a specific governance process, problem definitions and policy approaches that are dominant within the policy domain. In particular, two major elements within the institutional framework shape the urban development project: the role of the government and formalised rules of governance.

To begin with, the discussions mentioned above including the prioritisation of economic interests, issues of depoliticization and the concept of sustainability ultimately lead to debates on the role of the government. The discourse revolves around fundamental political values and beliefs and aims at analysing substantial problems and solutions of politics regarding sustainable urban development (Voss & Bornemann, 2011). For instance, the discussion on the concept of sustainability leads to a discussion on political values and how the conceptualisation of sustainability is represented in governance styles. Furthermore, the role of the government becomes crucial in the discussion on public decision-making power and the phenomenon of depoliticization. Critical questions related to this debate revolve around the distribution of power between the government and other actors that significantly shape the process. The critical question related to this debate is 'who steers the process and in what direction?'

The role of the government does not only manifest itself in certain values and beliefs but also in formalised rules such as regulations and policy instruments. Related to urban sustainability transitions, drivers and barriers to change become important. Therefore, this theme is concerned with regulations that support or initiate change, regulations that stand opposed to change by stabilising the prevalent (unsustainable) system and the lack of regulations. The following questions based on the role of the government and other significant actors as well as formalised rules of the institutional framework helped identify relevant content within the data related to this theme:

- How is the concept of sustainability represented in regulations regarding the urban development process?
- What influence does the governance style have on the institutional framework? To what extent is the governance approach shaped by a neo-liberal planning position?
- How are the ambitions reflected in policies and strategies?

The themes developed for the analysis are based on the theories for this research and have been compiled in a way to make the research questions tangible. While the urban entrepreneurialism theme is pointed at market forces and connected societal processes, the theme focussed on the conceptualisation of sustainability aims to analyse the underlying mindset of how Nordhavn fits in the vision of a sustainable city. The last theme, pointed at changes in the institutional framework aims to integrate the various elements of the analysis to paint the larger picture. In that sense, the analysis begins with the entrepreneurialism and sustainability concept theme to open up the opposing positions. Later, the discussions are put into perspective of the institutional framework to explore whether the duality manifests itself in governance structures. The outcome could also indicate marginal conflicts which could make the case for an integrated approach of sustainable urban development.

Limitations

The process of applying the themes was conducted by extracting phrases and sentences that could be interpreted in the context of the three major themes. Even when using predetermined codes, coding is to some extent biased because the coder is interpreting the content and context which will influence how the content is being categorized. A limitation of using these themes and of coding in general is the loss of context. The approach has received criticism as it leads to fragmentation of data, e.g. due to the loss of the narrative flow during interviews (Bryman, 2012). Also, the data is being categorized according to the researchers understanding of the themes, meaning that there is a risk of leaving out valuable or interesting information because it does not fit the category.

Further, the generally closed planning process made it difficult to get sufficient information, data sources as well as getting into contact with people. Often, the only sources available are compiled by the stakeholders themselves and, therefore, are not neutral. In the case of

Nordhavn, By&Havn is not only leading the planning process but also decides how to inform people about it.



FINDINGS

4. Findings

The outcomes of the interviews have been thematically organised according to the three themes described in the analysis section and will be used later on to structure the discussion.

4.1. Implications of urban entrepreneurialism

The results obtained from the interviews regarding the implications of urban entrepreneurialism begin with Nordhavn as a project that strengthens the urban image of Copenhagen through place branding. This is followed by the economic interests of investors that stand in the way of the sustainable character of Nordhavn or support it and socio-economic conflicts that can be associated with the project. Lastly, the interviewees' perceptions of public decision-making processes that can be linked to the development in Nordhavn will be presented.

Urban image/Marketing & branding

Regarding the role of Nordhavn as a project that strengthens the urban image of Copenhagen through place branding, the interviewees had different opinions. Both By&Havn and the Municipality of Copenhagen stated that the sustainability character of the district is used for marketing. While By&Havn stated that *"the fact that Nordhavn is a sustainable area has been used a lot as marketing"*, the Municipality emphasised that the district especially adds up to the image that Copenhagen is presenting outwards by stating *"it depends on the perspective, on who you are. If you are visiting the city or if you are a Copenhagener or you're coming from outside to live in Copenhagen (...). I think for people living in the older parts of Copenhagen, they will never go there. But for new people coming in I think it is a good opportunity to get some urban areas that are high-quality and close to the sea."*

However, both the architects and By&Havn stated that the neighbourhood is not just about branding but shows its sustainable character in smaller changes that might not be directly visible. By&Havn stated *"You hear a lot about sustainability and later in May, we're going to have a weekend which is about sustainability and all the shops which are there they have a sustainable profile. So, whether people choose the area because it's sustainable I don't know. But it's definitely a part of the identity in that area."* The architects highlighted that infrastructural changes such as the central parking garages initiate behavioural changes away from using the car towards using the bike. *"I think there's lots of sustainable things about this part of the city. (...) it's close to the city centre so there's a lot of focus for example"*

in our project about making it easy to take your bike to work. And when you go out into the elevator go down and go directly down to your bicycle and drive out of the basement."

The architects further expressed the opinion that although the development in Nordhavn might be influenced by the high market prices, selling the land adds up to financing sustainable public transport (the Metro) and therefore adds up to Copenhagen's sustainability strategy. They stated *"So on one hand I understand that it would be nice if they just gave the land away to someone who would build something nice (...) But I feel like I also understand the need to get the money for the metro which is actually I think a really sustainable solution"*.

Interest of investors in sustainable ways of building

A very interesting finding was the ambivalence about the interest of investors and developers in sustainable buildings. By&Havn stated that general interest in the construction and business industry on sustainability certification exists because it is seen as a new business area. *"They've been quite positive. Some of them actually put it as part of their strategy that they want to be certified like Pension Denmark. (...) They are very ambitious and they do it even though we don't put it in the clauses they do it in all the buildings."* The architects on the other hand stated that little interest exists in sustainable ways of constructing buildings *"It's not something that they are very interested in. So it's mostly a demand from By&Havn but it's not something they have a specific interest in. So of course, we have to fulfil the requirements but it's more something like how can we get there the easiest."* This opinion was shared by the Municipality which stated *"everything that doesn't cost money they will do with pleasure but every time it cost money, they have to see what is in there for them. Is it good for selling the building afterwards, why should they make it?"* The architects further mentioned that different mindsets exist among developers, some see sustainability criteria more as an obstacle but others see the additional value that comes with the certification. They stated that *"it's very dependent on if the client has an interest in it because if the client just thinks it's something, they have to do then it is a bit of an obstacle. But if the client thinks it's something that they also getting value from, from selling that it's DGNB certified then it's a much better tool"*.

However, By&Havn also stressed that including sustainability criteria is new for most stakeholders involved and therefore the process involves a learning process that takes time. They stated that *"In the beginning they just saw it as part of the contract (...). And of course, it's difficult to do. But now that they've done it, they say that they've got a much more systematic approach to sustainability. They've learned from it. And it just takes time. Businessmen and suppliers are not used to that. Some of the advisors are not used to it. So, it was sort of a learning process for everybody"*. This argument was echoed by the Municipality that said *"I think this can have an impact on other developments, smaller development areas*

in Copenhagen. So, they go there and see is there anything special, now with all the DGNB is there anything we can copy from that? And then build a nice area maybe not too expensive".

Public Decision-Making Processes

A range of issues were raised by the interviewees related to the theme of public decision-making processes. By&Havn stressed the importance of involving the public in the DGNB process and stated that *"There's a whole section both in the DGNB neighbourhoods and DGNB for houses. Where you're supposed to explain what kind of public engagement you have. You have to document it, you have to document which of the ideas the public came up with you have actually used later on. And then you get points. If you haven't used any of the ideas you don't get points, if you have used 10 of the ideas you get more points. So, you actually have to document it. And they also ask you if you have talked to the public about sustainability".* However, the public ideas stay on the abstract level of master plans. The social housing development company mentioned that they could not include the public in further decision-making processes since they are *"not building for the actual people who move in' but ' have a longer view in order to be sure that also in 20 years the apartments will be attractive and inviting and provide housing in an affordable way".* Copenhagen Municipality mentioned that the public was involved in workshops very early on but later in the process was only informed about the development rather than included in decision-making. *"They had 5 meetings with different interest groups(...) they have been told what's going to happen (...) No, that were informative meetings. In the first phase (...) they had workshops".*

By&Havn further mentioned that the way in which people can get involved needs to be formalised in a way to get citizens input instead of people criticising the project itself because *"usually when you have public engagement people will come there you will tell about the project and they'll just be very aggressive about whatever. Whether it's gentrification or nature. What we did here was we formed some workshops and said OK we've introduced a project to you can ask all the questions you want. And after that we like to get some input from you which we can use in the competition with the architects".*

Socio-Economic Conflicts

Most concerns regarding socio-economic conflicts were brought up by the social housing developer. They argued that the demand for social housing is very high by stating that *"it took about half an hour and then there were 2.000 people in the waiting list. Because of course people want to have a place to live they can actually afford".* However, they also stated that the social housing companies cannot compete with investors when it comes to land sales and need special regulations such as the 25 percent social housing quota and municipal support. This view was echoed by By&Havn who stated that it is difficult to integrate social housing because the sites can't be sold for the same price as for private

developers. However, they further argued that Nordhavn will fulfil the social housing quota of 25% and that planners are trying to overcome the problem by working closer with investors and different solutions such as smaller apartments and cheaper materials. In line with that, By&Havn emphasised that the planners are aware that the district is very expensive *"well it's expensive to buy a flat and they have a good income"* but stressed that they are *"trying to compensate for that by making sure that we also have social housing in the area. And we have student housing in the area and one of the most expensive flats in the entire country is the silo"*.

The social housing company brought up the influence of financing the metro and its wider implications on the housing market. They argue that *"By og Havn (...) need to make money in order to pay the metro and other structural projects. There is a dilemma between wanting to have social sustainability in an area and then wanting to get the most out of their money. Because they can get a much higher price selling it to the private investors instead of selling it to a lower price to the social housing companies"*.

The architects mentioned that a high share of apartments are luxury apartments that will be bought by people who don't live in it and stated *"I don't understand who can afford to live there. I mean it's crazy expensive. I'm just saying that because that means a lot of the apartments are being bought by people who actually don't live in Denmark"*.

4.2. Concept of Sustainability

The findings regarding the concept of sustainability begin with more general understandings of the interviewees, followed by more specific understandings of social and environmental sustainability in the context of the Nordhavn project. Lastly, the results revolving the perceived level of ambitiousness are presented.

Understanding of Sustainability

Regarding the concept of sustainability, the interviewees brought up very different points and perspectives. To begin with, the Municipality mentioned that the notion of sustainability not only includes sustainable materials but could go in various directions and depends on the possibility of an actor to take action. They stated that *"Sometimes we think it's good to push people in one direction if they can't do material things maybe they can do something else. So maybe for us it's a good way to find the best way for the city in any special place"*.

The architects shared several thoughts on the concept of sustainability. They mentioned that over the last years, the interest for sustainability in construction has increased. *"I think it's also something that will change. Just a few years ago it was something you talked about. I think now people are interested in maybe experimenting and trying to find new ways of building"*. Furthermore, they mentioned that sustainable development is also reflected in small changes that change people's behaviours such as building central car parks where people have to walk to in order to take the car, *"I think this is about making it a little more difficult but also something that people have less cars"*.

The architects explained that some criteria related to the process or aesthetic values that go beyond environmental sustainability are important but could be difficult to put into building regulations. In particular, they mentioned architectural competition for each building to *"not only focus on sustainability but also actually making some nice buildings beautiful buildings. And having really not just one office making a proposal for something but to have to have competition"*. They further mentioned that projects are misusing the concept of sustainability by claiming buildings as sustainable while using only marginal portions of recycled material. *"I think there's lots of projects in Denmark that claim to be sustainable. But if you look a little into it than it's not sustainable at all. Maybe you have reused wood from somewhere in some project or a little bit of concrete that is reused but if you look at the whole picture and you're seeing that whole building as a in the life cycle analyses it doesn't mean anything"*.

Regarding the way to build cities in a dense way to make them more sustainable, the architects pointed out opposing goals and stated that *"if you want to have this sustainable*

agenda and you want people to live close and then it's also difficult to have a lot of green. I mean there's so many different factors that doesn't talk together".

By&Havn mentioned that they use the DGNB criteria before areas are developed to prioritise sustainability goals, *"before we start developing an area, we make a screening with DGNB where we focus on all areas and find out which are the sustainable themes in this area that we have to look particularly much after. And then we try to take these themes and put it in the master plan competition and ask the architects to respond to nature to social sustainability etc."*. However, the architects argued that the criteria of DGNB do not completely revolve around sustainability but include aspects such as the development process. *"But I think with DGNB there's also some things that don't revolve around sustainability. You get points for having an architectural competition and the process and all these things"*.

Social Sustainability

Different conceptions of social sustainability were brought forward in the interviews because as By&Havn stated *"social sustainability is a concept which has been very much debated because there are very different perspectives on what it is"*. By&Havn stated that they focus a lot on liveable cities and aim to *"make sure that there's a good life in the area. We support the areas, sometimes we support development of projects for culture or sports because this is a good way for people to get together"*. Furthermore, they connect the concept of social sustainability with community building, trying to form *"associations where they (the residents) get together and they take the responsibility for the area. They also get a political voice in the city"*. The social housing company on the other hand mentioned social sustainability related to have a more diverse population in the area and stated they aimed *"to make a building that uses a synergy between the different facilities in the house because there is a kindergarten and housing for socially vulnerable people and almene boliger and in the ground floor there is shops"*. The architects brought up the point that although there are regulations to make affordable housing through almene boliger or reducing the apartment size, the housing situation in Nordhavn would still be very expensive.

Environmental Sustainability

Although the notion of environmental sustainability was a recurring theme in the interviews, it was mentioned by the interviewees mostly through the use of sustainable materials. A point that was expressed directly by the interviewees in connection to environmental sustainability was the topic of green infrastructures and urban nature. The social housing developer mentioned that green spaces in the area are still lacking and stated *"It's very urban. And they're leaning a lot on the old parks in the existing part of the city. And taking advantage of all of the blue areas and that's wonderful, I just wish that they would make a*

little bit more room for traditional green areas. They are very scarce". The architects mentioned that the nature character of the area is more related to blue recreational areas since Nordhavn is close to the sea but they also stated that *"the whole Nordhavn is one big piece of concrete"*. By&Havn stated that people perceive the area as lacking green spaces but then argued that the area did not have many green spaces before the development began *"People think there is too little green spaces. And this is because it is a dense city and it was an industrial area, so there wasn't a lot of green areas when we started building there"*. However, they also stated that it is aimed to compensate for lacking green infrastructures through new solutions on roofs and blue areas. *"But we're trying to compensate and find new areas on the roofs for example, for gardens"*.

The social housing developer stated that the environmental standards are relatively high, *"The way we build lives up to the general standards and the law of course. Which is relatively high. But we are not doing anything above what is required"*. However, they argued that social housing cannot be more ambitious in terms of environmental sustainability criteria because of financial limits. *"But we are not in the environmental sustainability (...) With the almene boliger we have some financial limits and limitations"*.

4.3. Institutional Framework related to change

Role of By&Havn as a business company aiming for profit

During the interviews, the special role that By&Havn plays in the development project was mentioned by several interviewees. By&Havn themselves mentioned their role related to the time frame in which they operate *"we have a longer horizon we focus more on sustainability and we try to work with some of the goals which City of Copenhagen has for sustainability"*. However, they also stated that By&Havn was set up to operate as a business in order to finance the metro and therefore have more freedom to act than the Municipality. The Municipality on the other hand stated that although the company wants to create a nice city district, By&Havn acts as any other developer in the area trying to get the most profit out of the land in order to finance the metro. They state that *"they have to get the money for the metro. That's their main purpose. They can't say we just want to make Nordhavn a great park and green. So, it is actually decided how many square metres they had to do in Nordhavn. Not how they're going to do it"*.

The municipality further stressed the decision-making power that By&Havn has in the development project. *"We have a board with two politicians sitting there. And they are not allowed to interfere in the daily affairs of By&Havn. They are totally closed. (...) they don't do the big decisions about what materials and so on. It's not like Copenhagen Municipality can decide how it's done"*. However, this does not apply for the local plans which are developed together by the Municipality and By&Havn.

Role of the Municipality

Statements on the role of the municipality were mostly made by the municipality itself. An interesting issue that was mentioned was the political will related to ambitious sustainability regulations. *"We could say we will never use concrete. If there was a political decision about that. That could be possible. But it's very hard to do that in Copenhagen I believe. I don't think they (the politicians) will go that far"*. The Municipality also mentioned differences in ambitions when it comes to politicians on different levels. *"I think our politicians (local politicians in Copenhagen) are more green than the politicians in the parliament."*

Although the Municipality argued that the building code is not ambitious enough, they stressed that the ambitions for municipal buildings are higher than what they can impose on developers. It was stated that they *"have a lot of buildings that the municipality builds for ourselves. And we have special rules about sustainability on all buildings. (...) Schools and things like that, we are tougher in our demands for sustainability"*. By&Havn argued that the city cannot be built over night and that it takes time to adjust and improve the process and

that *"what the people are doing there and identifying barriers which they are confronting the politicians and the ministries with (...) it's just takes time"*.

Next to developers and construction firms, the Municipality argues that the political will to aim for a more ambitious integration of sustainability goals is lacking and that politicians delegate the responsibility to the Municipality without a clear understanding how far their influence reaches. They stated that *"the politicians don't always know what we can do and what we can't do in the local plans"*.

Next to the lack of political will, the Municipality mentioned the issue that the laws they control are only limited to the outside of buildings and higher sustainability standards cannot be introduced. It was mentioned how these regulations could be avoided by developers *"our planning laws are limited just to the outside of the buildings. We can say you have to make a wooden building but then they come with this very thin wood and put it on the outside of a concrete house, that's not doing anything"*.

Lack of regulations

The interviewees agreed that several regulations are not ambitious enough or not up to date. They mentioned the lack of regulations regarding sustainability transitions in various ways. By&Havn mentions that on some issues, such as recycling, the Danish legislation is not up to date and that businesses in those fields are often more advanced when it comes to sustainable solutions. The architects shared the opinion that the regulations regarding sustainable buildings are not ambitious enough and said *"we're not getting far enough"*. The social housing company responded to the lack of regulations in relation to the availability of affordable housing. They argued that although there are around 2500 people living in the area, there is only one house that is classified as 'almene boliger'. However, the Municipality argued that the regulation of 25 percent social housing was not part of the first development phase. *"But for the new ones we have the 25%. We can't have no social housing in an area. That will definitely happen"*.

Regulations supporting change

The requirements revolving sustainability that are in place had been positively mentioned by the interviewees. The architects said that it is *"good that they decide to have this DGNB certificate because otherwise there will be even less interest in having sustainable solutions"*. By&Havn support this argument and state that the clauses in the sales contracts that incorporate sustainable ways of building led to a significant increase of certified buildings from 10 to 60 percent of the buildings in eight years.

The architects further stress the importance of the Municipality to implement ambitious regulations instead of leaving it to the market: *"It should be building regulations that makes*

the demands and should be high enough to kind of like reach our goals instead of it being like a private thing. Because it's so much like a marketing thing". However, the Municipality argues that changes will more likely be led by businesses than by politicians. "Businesses want to have green and sustainable houses. So, I think it is coming the other way around. Our politicians are often much more careful not to make more decisions for people than they are actually are able to do".

Regulations that hinder change

In fact, the Municipality argues that regulations limit the power of the Municipality. Developers cannot be forced to build more ambitious than what is required by law. *"we have no regulation that says you have to do these specific things. If they don't want to build that way, we can't make them.... our planning laws are limited just to the outside of the buildings. We can say you have to make a wooden building but then they come with this very thin wood and put it on the outside of a concrete house, that's not doing anything".*

The architects stress that certain regulations make it more difficult to use sustainable materials for construction. *"A lot of fire regulations make it more complicated (...) the whole Nordhavn is one big piece of concrete. It's like everything is like you have bricks and sometimes you have maybe some reused bricks or something. But the truth is that it's really not sustainable in that way".* By&Havn share this opinion and state that *"some of the people who have been trying to take away concrete from the buildings and use other materials they've had problems with the building codes".*



DISCUSSION

5. Discussion

This work aimed to explore in what way the urban development process in Nordhavn is shaped by the duality of economic growth versus a green and socially just sustainability vision. Further, it was aimed to examine to what extent the project can be considered an integrated approach of sustainable development that considers the three pillars of sustainability equally. Therefore, this section will start out with discussing the results against the theories by using the themes of the prior introduced fundamental debates. First, the implications of urban entrepreneurialism within the Nordhavn case will be discussed, followed by the concept of sustainability and, lastly, the institutional framework and its relation to change. Thereafter, a second order position reflecting on how the theories opened up the analysis of the Nordhavn case will follow. It can then be asked where do the scientific positions lead us, what do they tell us? What did they make visible? What elements of the process stay hidden? What are their strengths and weaknesses to assess sustainability transitions?

5.1. Debates around Nordhavn's sustainability transition

5.1.1. Implications of Urban Entrepreneurialism

The 'Growth First' Ideology

As initially assumed, place branding plays a major role in the Nordhavn project. This was not only brought up by the architects but also by the Municipality itself. The statements of the interviewees supported the picture that Copenhagen paints in the Municipal plan or other policy documents. Copenhagen aims to strengthen its positive image of a city with a high quality of life through the sustainability aspect in Nordhavn as a showcase of future oriented urban planning. The Municipal Plan from 2015, representing the most recent document for the development of the city, states that although Copenhagen is known for 'sustainable solutions that combine growth with positive development for the environment and for the climate, the city's economic growth is falling behind' (Københavns Kommune, 2014, p. 1). The city has therefore set ambitious goals of an annual GNP growth of 5 percent which is aimed to be achieved by collaborating regionally to attract assets and professionals – investments, businesses and scientific and educational institutions (Københavns Kommune, 2014). The city's strategy is based on the idea that quality of life and growth are inseparable and need to go hand in hand (Københavns Kommune, 2014). Therefore, economic growth is a main focus on the agenda of urban development in Copenhagen. This reflects the entrepreneurial governance style based on keeping the city visible within the interurban competition (Gulsrud, Gooding, & Konijnendijk van den Bosch, 2013). Besides new mechanisms of public-private partnerships and the privatisation of public services, a

central approach of neoliberal planning that can also be found in Copenhagen builds the promotion of real estate development (Hackworth, 2007). Especially large-scale development projects such as Nordhavn are well known elements of the entrepreneurial ethos and build a key component in the growth approach of Copenhagen.

As part of the place branding and marketing elements in the project, the role of investors and particularly their mindsets turned out to be of high importance. One important finding was the overall positive picture investors seem to have about sustainability certifications. The willingness of investors and developers to aim for high certifications for their projects indicates that it can be beneficial to connect sustainable development with economic values. Especially if the intrinsic value of sustainable development will not lead developers to change their ways of building. Higher rents that can be obtained for certified projects, for instance, can build a strong incentive to include sustainability criteria.

As the interviewees explained, the motivation to use the DGNB certification scheme is primarily based on additional financial benefits rather than intrinsic values of a sustainable future. The priority on market value is a quite strong argument for investors as the certification helps improving their image, process quality, and facilitates better sales and rental appeal. With the focus on market solutions and demands, it seems that the DGNB certification of Nordhavn feeds right into the entrepreneurial approach of Copenhagen's green growth strategy. The underlying premise is to achieve a more sustainable form of urban development through new technologies and better materials. This finding goes together with a recent study conducted by the DGNB council stating that the motivation to use sustainability certification schemes mainly results from additional value on properties and is less often motivated by intrinsic nature values (DGNB, 2018a). However, in the study it was used as a positive factor that underlined the importance of the economic pillar within the sustainability concept.

Despite market forces playing a major part in the development project, the results also indicate further reaching processes of a sustainable transition that are not directly visible. As mentioned by the architects, Nordhavn's several infrastructural changes including central parking facilities or priority for pedestrians and bikes in the street are designed to initiate behavioural changes and new habits amongst people. By&Havn stated that there are activities in the area that strengthen its sustainability identity. This supports the idea that structural changes outside economic interests can have wider implications on the sustainability transitions. It seems possible that especially transport and energy related behavioural changes could be initiated outside market activities. However, these sectors were outside the scope of this work and could be an important issue for further research.

Depoliticization and Decision-Making Processes

The results show that while investors have a lot of influence on the process, there is limited involvement of the civil society, consumers or the wider public in the decision-making process. The processes of public involvement only took place in the first phase of developing the area in Nordhavn where input could be given to be integrated in the masterplan and architectural competition. Further involvement took place in thematic workshops, exhibitions and informative meetings which show that the level of citizen engagement stays only between informing and consultation. This indicates that the possibilities of the public to influence the process stayed quite general and superficial. A possible explanation for this finding might be a general lack of formalised strategies on public involvement in Copenhagen. The city-wide goal of involving the public more closely in urban development through co-creation can be found in the Co-Create Copenhagen Strategy as well as in the Municipal Plan and the Copenhagen Action Plan for SDGs. However, the strategies leave out how it is aimed to achieve that goal. For instance, the Co-Create Copenhagen Strategy states that the city aims to raise the percentage of Copenhageners stating to have plenty of opportunities to get involved at a local level up to 70 percent without stating how it is planned to achieve this. There are still many questions on how to operationalise these strategies.

The closed process led by By&Havn supports the argument for the government deciding how much the public will be involved and stands for an efficiency-oriented governance style that can be associated with neo-liberal approaches of urban governance. As Torfing et al. write, *'public managers who see themselves as efficient managers in charge of a stable, high-performing organization will be terrified by the thought of collaborating with individuals from other organizations and sectors that they cannot control'* (Torfing, Sørensen, & Røiseland, 2016). On the other hand, the social housing company argued that there were no residents living in Nordhavn before the neighbourhood was developed. Therefore, it might be difficult to include people in the decision-making process because instead of future residents mainly people with a general interest in urban design and development participated in the workshops.

As explained by By&Havn, the DGNB certification for urban districts includes public participation in the criteria. This means that public involvement is considered based on a point system. The more public ideas are integrated in the project, the more points can be made which ultimately might lead to a higher certification. The criterion PRO 1.1 for process quality include two criteria. Ten points can be obtained for implementing various measures to inform the general public while another ten points can be made for informing people in the immediate neighbourhood about the building work (e.g. duration, anything particular

that needs to be noted) and appointing a contact person that has to answer any queries (DGNB, 2018b).

However, these criteria are quite general which leaves the method of public involvement to be chosen by By&Havn if not stated otherwise in the law. Within the criteria set of process quality, it states that *'public consultation is mandatory for certain building and planning projects (formal consultation). While the consultation rights, the procedure and the manner in which results are utilised are stipulated by law in these mandatory processes, these matters can be addressed in various ways by means of voluntary, informal processes, depending on the circumstances'* (DGNB, 2018b). This means if there are no mandatory processes enforced by law, the voluntary processes depend on the circumstances and can be chosen relatively freely.

Although, it could be argued that the public participation criteria can make DGNB a supportive tool for public-decision making, it holds the risk of reducing democratic decision-making to a nice-to-have. The points obtained by involving the public are relatively low and could be generated through a different category such as a high energy efficiency. Eventually, the public might only be involved for the points needed to get to a certain level of certification. That makes the integration of public-decision making in economic tools risky because it could lead to public decision-making processes as envisioned by DGNB which might be lower than what Copenhagen is aiming for. This is an important issue for further research since very little can be found in the literature that focusses on process quality and public participation within sustainable certification schemes.

Socio-Economic Conflicts

On the question of socio-economic conflicts, the results showed that a dilemma exists between aiming for affordable housing in the area and maximising profits to pay off the debt from the metro. To ensure social equity, the city aims to shelter social coherence from market forces through a regulation that requires 25 percent of the apartments in the area to be social housing. However, to this day, only one house in the social housing category exists in Nordhavn, providing 131 apartments to families, students and citizens with special needs. According to the social housing developer, the project accounts for around 6 percent of the total required 25 percent in the area. The apartments on Orientkaj are built with a contribution of 10 percent from the municipality and hold an average monthly rent of 7.416DKK for 85m² (Københavns Kommune, n.d.). This means the apartments are not more expensive than almene boliger in other parts of Copenhagen.

However, it is important to distinguish between affordable and social housing. As the Østerbro Local Committee stated in the district development plan, Østerbro is a very mixed neighbourhood that has great social differences and social cohesion builds one of the main challenges. Instead of a district that is divided into areas with only small, cheap apartments and other areas with large expensive apartments, mixed and diverse urban areas with the opportunity to live the life each citizen wants, side by side are desired.

Yet, as the results indicate, the opposite is happening dividing Nordhavn more from the older parts of Østerbro. Today, the average sales price for apartments in Nordhavn are about 3,5 times higher as in the rest of Copenhagen. As the housing statistics from Boliga show, the average m² price in Copenhagen lies around 17.000DKK while the m² in Nordhavn (Postnummer 2150) were as high as 59.000DKK (Boliga.dk, n.d.). Integrating 25 percent social housing into new development areas supports the argument that Copenhagen is aiming to take over social responsibility and wants to build a bridge between economic growth and social sustainability. It further reflects the Danish state interventionism wherein the state leads, prioritises, plans and executes for the 'common good' (Majoor, 2008).

5.1.2. Concept of sustainability

Conceptual Fuzziness

The results indicate that different understandings of sustainability shape the development process to a high degree. In particular, the Nordhavn project shows the influence that DGNB has on the stakeholder's concept of sustainability. In Nordhavn, DGNB standards were chosen as an instrument to ensure sustainable housing instead of developing own city-wide sustainability standards that improve requirements from the building code. This results in the DGNB tool determining the sustainability standards for Nordhavn without being questioned. In other cases, such as the HafenCity in Hamburg, own standards have been introduced to raise the standard and investors have the legal obligation to fulfil these requirements. Contrary to Nordhavn, Hamburg uses its power to raise the standard instead of leaving it to the market. This also includes the dimension of social sustainability where criteria such as family friendliness or the enhancement of social and educational initiatives and institutions that serve the social and cultural interests are included (HafenCity Hamburg, 2017).

The DGNB certification is often chosen due to its holistic and near-equal division of environmental, social and economic aspects. The equal focus on economy makes DGNB a balanced certification system, rather than an environmental certification system (Jensen Guldager, K.; Birgitsdottir, 2012). However, although the certification scheme considers all three pillars of sustainability equally, it is often criticised for equating social sustainability

with health, comfort and user-friendliness instead of social responsibility (Ahmad & Thaheem, 2017). The results illustrate that the certification still remains a black box to some extent since lack of data and access to the DGNB rating system make it challenging to use, review and study (Marjaba & Chidiac, 2016).

One unanticipated finding was that the DGNB certification scheme is not only used to rate the site and buildings on their sustainability performance but also to prioritise sustainability goals within the areas. While the project in Nordhavn focusses mainly on environmental (and economic) aspects of sustainability, some areas in Copenhagen to be developed by By&Havn will be focussed more closely on social sustainability. Using DGNB criteria to prioritise sustainability goals means that planners use an economic tool to decide on highly complex issues related to sustainable development. This means relying on the DGNB tool might fail to develop urban areas in an integrated way that considers all three pillars of sustainability equally but instead focusses on certain elements and neglects others.

Technocentric approach of sustainability

Regarding the lack of green spaces in urban nature, the interviewees showed different perspectives. While the architects and the social housing developer stressed the fact that there are not enough green spaces and concrete walls and paving shape the area, By&Havn argued that it is difficult to find the space in the neighbourhood and that the area used to be characterised by industry before the development process and not by nature. However, the argument of By&Havn to compensate for green spaces through solutions such as the playground on top of a parking house indicates a very technocentric approach of the planners. This approach, primarily aims to offer practical pathways which neglects the importance of urban nature in environmental sustainability as well as social issues connected to that. Contrary to the approach in Nordhavn, environmental sustainability is often connected to green infrastructures, nature-based solutions or ecosystem services in the literature.

Though Nordhavn is known as the blue city district, it is equally important to incorporate green living areas, parks and recreation areas. Initially, it was planned to make for ample and varied vegetation landscapes through trees, parks, housing façade plantings and rooftop gardens. So far, the residents of Nordhavn have to rely on larger green space in other city parts which can be difficult since the older parts of Østerbro show a lack of green spaces per capita. Compared to the average green space per capita in Copenhagen of 39m², Østerbro only offers 12 m² green space per capita (Københavns Kommune, 2013).

Within the interviews, sustainable measures were primarily referred to through the use of sustainable materials. However, this was probably related to the fact that the interviewees were architects, developers or involved in the planning department. Next to the DGNB certification, Nordhavn aims to integrate further elements such as a new energy system and climate change adaptation measures. However, most solutions focus on technologically solvable problems and win-win solutions. The soil excavated while constructing the metro for instance, will be used later on to raise the land and protect it from flooding.

5.1.3. Institutional Framework

Role of the Government

Apart from the Municipality, the development project in Nordhavn is shaped to a large degree by the development company By&Havn which has been established in order to finance the metro for Copenhagen by developing and selling municipal land. This mechanism, called land value capture, is based on the company owning the land for regeneration in Copenhagen, being able to re-zone and make financial investments in large scale infrastructures. This is possible since By&Havn is a hybrid organisation being owned publicly, 95% by the Municipality and 5% by the state, and privately managed. Since developing entities are usually entirely public or private, By&Havn makes the Copenhagen model a special case. The concept for By&Havn is based on the concept from the 1990s for a large-scale plan to regenerate the city. Initially, the Ørestad Development Corporation was created to develop lands without using citizens tax-money since Copenhagen was almost bankrupt and more and more people were moving to the suburbs. In 2007, Ørestad Development Corporation was restructured into By&Havn and more lands and authority were transferred to make By&Havn a financial vehicle for economic growth (Noring, 2019).

By&Havn is based on the model of a 'public asset corporation' which has mainly been advocated because of its efficiency and accountability (Noring, 2019). Contrary to By&Havn being privately managed, the Municipality is obliged to listen to a multitude of public opinions and societal groups. The most prevalent argument of transferring decision-making power to By&Havn, therefore, is the inefficiency of the Municipality since negotiating with citizens and other actors can result in slowing down decision-making processes and increased bureaucracy. However, while the model might be helpful in financing the metro, it also leaves By&Havn with very high decision-making power.

With only 113 employees deciding about large development projects of the city, the arrangement might support processes of depoliticization. Although 95% of the organisation is owned by the municipality, their daily affairs are completely closed for the Municipality to interfere. This means the municipality has given power away in order to be more efficient

and accountable. Outsourcing and privatising prior public services reflects the entrepreneurial governance approach of the city. The public asset corporation might make urban development processes more efficient and accountable but strongly limits the influence and decision-making power of the Municipality. This finding reflects the position of the Østerbro Local Committee who proposes a re-establishment of systematic cooperation between the City of Copenhagen, By&Havn, and the area's residents. In the development plan for the district, the Committee states that the planning process in Nordhavn seems very closed and cross-sectoral answers can be difficult to obtain (Københavns Kommune, 2013, p. 45). This process of facilitating growth by changing the relationship between the public sector, private sector and civil society is a clear attribute of the neoliberal ideology (Wright, 2013).

One example for the limited influence of the Municipality are the building standards for Municipal buildings. As mentioned by the Municipality, the standards are higher than those imposed on developers through the building code. This shows that the ambitions of the municipality are quite high but their power to impose these standards on buildings within the whole city remains limited. Further, the municipality develops local plans but these stay restricted to the bare outside of the buildings and surrounding areas. The only ways to interfere for the Municipality are through laws and regulations that have to be introduced by politicians. However, their political will to aim for more fundamental changes is often lacking.

The national statutory mandate obliges the By&Havn to maximise revenues to fund the metro. As the Municipality pointed out, By&Havn have to prioritise projects with high revenues which limits them in some cases from being more ambitious in terms of social equity and green spaces. This could be the case because green spaces take away land that could otherwise be sold and build on while affordable housing gives away expensive ground to cheaper prices which could be sold for higher prices. The law to always act on the highest revenue shelters By&Havn from political interference concerning disputes on alternative investments based on societal moods and political priorities (Noring, 2019).

Rules and regulations for change

The consequences of reduced power within the Municipality and a lack of knowledge or will for change amongst politicians is reflected in the absence of regulations regarding sustainable urban development. As stated by several interviewees, the legislation is often not up to date which leads to unsustainable practices such as the excessive use of concrete or businesses experimenting and using new technologies that have not been approved by the planning department. As mentioned by the Municipality, this means that '*change is coming around the other way*' (Interview Lise Pedersen, 2019). The Municipality, therefore, often relies on the ambitions of businesses and market demands. If the businesses choose

to do nothing, no change will happen. This passive attitude corresponds with the idea of ecological modernisation that is based on progress through innovation and technology. Furthermore, the DGNB certification presents a tool that makes it possible to increase standards without formalising the rules in laws and regulations. This represents the Municipality's mentality of letting actors decide in what way they can take action within the sustainability transition.

Relying on the market instead of developing own standards can be particularly problematic because once buildings or neighbourhoods are certified with the highest standard, it can be perceived as an end goal for sustainable districts. However, if the points for a high-levelled certificate result from criteria such as lifecycle costs, parking space and long-term market potential, certified neighbourhoods barely show high ambitions in terms of sustainability as defined in the SDGs or stated by the city of Copenhagen. In the case of Nordhavn which reached the highest level of certification, 92,6% of the required economic criteria were fulfilled while the ecological quality only added up to 66,7%. This shows that market tools to foster sustainability ambitions could be inadequate to move towards sustainable cities. As the architects pointed out in the interview, the developers cannot be forced to build more sustainably without regulations. By relying on DGNB, Copenhagen trusts the market to push for more sustainable solutions.

Building bridges between sustainability dimensions

This work aimed to assess how far the duality between market forces and sustainability visions shape the development process in Nordhavn. It can be concluded from the results that Copenhagen aims to combine economic growth with an ambitious vision of sustainability but leaves the power of decision-making mainly to market actors such as By&Havn or economic tools such as DGNB. It is aimed to integrate solutions that make sustainable visions more practical instead of staying with the vision only. However, most findings strongly support the hypothesis of the market influence on sustainable urban development leading to an entrepreneurial governance style.

Within the Nordhavn case, DGNB seems to be an effective tool to close the gap between investors economic interests and the public interest of sustainable urban development. It presents a solution to require higher standards in the neighbourhood where the building code is restricted to the outside of buildings and not ambitious enough. However, it is important to keep in mind that DGNB is primarily an economic tool and follows a very particular definition of social sustainability that is mainly focussed on users of the certified building or neighbourhood. It is important to bear in mind that social sustainability is a very context dependent and case specific concept. What is socially sustainable in one place might not be somewhere else. By choosing DGNB certification instead of developing their

own standards and updated regulations, the Municipality might disregard their own ambitions and relies on the certification criteria to be sufficient.

However, it is important to keep in mind that despite the consequences of the regional growth strategies including privatisations and other market mechanisms, the strong history and culture of Danish state interventionism has shaped their style of governance (Majoor, 2008). This means that the Danish welfare state still has a significant influence on the style of governance and functions as a justification for prioritising growth by creating a regulatory framework which makes it possible to reduce the socio-economic polarization effects of market forces to some degree (J. Andersen & Pløger, 2007). Following the idea of a coherent city, Copenhagen's development strategy aims to reduce inequalities through a redistribution of financial resources, the creation of jobs and by increasing the quality of services for all citizens. This approach is based on the assumption that the absence of growth would foster unemployment and increase social inequality (Københavns Kommune, 2014). Thereby, Copenhagen's neo-liberal governance style becomes rather a complex and partially contradictory assemblage of policies and practices.

5.2. Reflecting on the theories

Perceptions of the same processes vary between stakeholders based on their theoretical perspectives of looking at the world and making sense of it. The intention of this work is to go beyond simple answers and to explore theoretical perspectives and epistemological positions within the context of sustainable urban development. Therefore, a second order perspective is required to assess how it becomes possible to open up the discourse on sustainable cities. This section seeks to explore the theoretical perspectives used in the research, and, to reflect on their strengths and shortcomings. This will be done in the same order as presented in the theoretical framework starting with neo-liberal planning theory followed by ecological modernisation and critical urban theory.

Neo-liberal planning theory

The general approach of the neo-liberal perspective towards sustainability transitions can be described as one-dimensional and without challenging the system or being pointed at deeper structural changes. It fails to open up a critical discussion about the sustainable transition in Nordhavn because it cuts off any thoughts on structural or deeper change in a wider sense. Neither does the position challenge the predominant systems or even their subsystems, nor does it look at changes in consumption patterns and behaviour. Rather, it approaches sustainability transitions as a closed process and does not intend to question the position of leading experts in favour of a broader audience. The importance of the civil society is not recognised and therefore, the policy makers' role becomes the one of a business-strategist. Grounded in a vision of the future as very similar to the present, neo-liberal planning theory does not challenge capitalist logics and only looks at market-based domains. Public domains such as green infrastructures are only looked at in a market value approach asking for increasing property values. This shows that the neo-liberal position fails to look at the sustainability transition in Nordhavn in a holistic way and therefore is not able to provide deeper insights or open up the discussion.

However, the neo-liberal position resulted to be helpful to analyse existing structures and institutions including the roles and interest of actors and economic goals of the development. These proved to be very important since they build the framework of structures, the regime, in which changes take place. The position strengthens the argument that market forces are a reality that needs to be taken into account. Contrary to critical urban theory, it recognises implications of the incumbent capitalist system and takes effects of globalisation into account. Neo-liberal theory, therefore, adds up fundamentally to the question how the market and economic growth shapes the urban development process in Nordhavn and builds a base or a starting point for sustainable transitions.

Next to the market and related processes, the perspective sheds light on the entrepreneurial ethos that shapes governance approaches and builds the ground for sustainability transitions to take place in. To foster sustainable urban development, it becomes essential to take the underlying notion of 'growth first' into account which helps understand why structural changes are not taking place.

Ecological Modernisation Theory

Ecological modernisation theory can be described as multi-dimensional and focussed on the practicality of solutions connected to sustainability transitions. In contrast to the orthodox position of neo-liberal planning, the critical questions asked are pointed at structural and deeper change and take more factors into account. It contributes to the discussion of sustainability transitions with critical questions directed at systems and structures. This also includes policies and regulations that facilitate change and foster sustainability transitions or work as barriers to them.

Furthermore, the position opens up daily life practices by asking for routines, habits and rules. It serves to explore how political actions, regulations and daily life practices shape the urban development project in Nordhavn. However, the position is mostly focussed on the environmental side of sustainability and does not take wider social or political issues into account.

The civil society is seen as a crucial actor in creating new opportunities for innovations that can contribute to the development of an alternative regime or supporting new innovations but is only considered when opposing the regime, against particular developments. In other words, civil society is not taken into account actively for decision-making processes. The position is overlooking wider social and political issues and the critical questions stay within the capitalist logics and dynamics. The incumbent system itself is not challenged but accepted as a reality.

As in the neo-liberal position, the vision of the future is similar to the present with the difference of consisting of different sub systems and does not aim for a value changes that limit consumption and capitalist growth which would entail radical changes. By taking the capitalist system as part of the inner logics, the duality of sustainability transitions shaped by market mechanisms rather than through decisive government action is not challenged. This shows that even though the interconnections of different domains and actors are recognised, ecological modernisation is not able to explore the complexity and possibilities of sustainability transitions.

Critical Urban Theory

Similar to Ecological Modernisation, critical urban theory is multi-dimensional and perceives sustainable transitions as a complex process. However, critical urban theory recognises that sustainable urban transformation is about more than creating technically sustainable urban areas and stimulating economic development but must engage, attract and excite people about opportunities and lifestyles today and into the future. By asking what could have been done differently in the process, the perspective considers alternatives to the current system and with that opens up discussions on reflexivity and learning processes.

Based on issues of social equity and decision-making power for citizens, questions of critical theory aim to analyse the role of the government and the civil society. This includes governance styles of steering urban developments and in what way civil decision-making processes are valued. The focus on social issues and equity puts an emphasis on the aspect of social sustainability in the process that cannot be found within the other perspectives: compared to ecological modernisation and neo-liberal planning theory, critical urban theory is the only one that pays attention to social and political issues. This means without the lens of this position, conflicts within democratic decision-making processes would not have been considered within the analysis of the Nordhavn neighbourhood.

However, the critical approach does not consider capitalism and its inherent logics and mechanisms which might result in idealised economic models. In that sense the approach is critical towards the capitalist system in a way that disregards its power and complex interwovenness. The position therefore tends to be recognised as utopia which makes it easy to waive alternative ideas on sustainability transitions. Contrary to the ecological modernisation theory, approaches of critical urban theory remain fragmented and can be difficult to connect on a deeper level. Above all, because the field remains broad and poorly defined and covers many topics. It is not structured around a framework that provides for recognising different kinds of socio-economic transitions in different transition sectors and arenas, or for showing how these might relate to and support each other.

Theories related to the reconfiguration position are more processual using qualitative, interpretative and comparative research methods. Epistemologically, ecological modernisation fits with critical realism based on the importance the position attributes to patterns and underlying mechanisms searching for the nature of causation, agency, structure, and relations. This separates the position from the neo-liberal approach which can be linked more closely to logical positivism.

Summary of theoretical contributions to sustainability transitions

The theories show different approaches towards sustainability transitions based on certain mindsets, paradigms and epistemologies. This means the theories create multiple realities that exist for themselves and do not challenge each other. The epistemological pluralism results in manifold discourses of predominant planning paradigms rather than integrated approaches. Considering the three very different perspectives on sustainable urban development, the question remains what does an integrated approach entail? If the orthodox and the critical theory are two opposing poles, what is needed to build the bridge? In what way can ecological modernisation be expanded or changed to present an adequate middle way for sustainable urban planning?

As this research shows, the theory of ecological modernisation hardly presents an appropriate answer to the duality of economic growth and anti-capitalist visions of sustainability. Instead, it stands in congruence with the epistemic premises of neoclassical economics which makes it inappropriate as a model for development (Warner, 2010). For ecological modernisation to become an integrated approach and overcome the duality of market and sustainability visions, an ethical and epistemological shift has to take place that is able to initiate change in political behaviour. In order to change existing configurations of governance, markets and social institutions, the theory has to let go of its pragmatic mindset of solving problems within the terms of its own perspective because otherwise it will fail to produce significant transformations (Cox, 1981). This means ecological modernisation theory needs to reflect more critically on social and political issues and challenge the 'growth first' ideology of neo-liberal planning approaches. Otherwise it stays too closely linked to the orthodox position which would lead to only marginal changes.

Reflections and implications for further research

When reflecting on the results, it becomes important to take the framing of the researcher and the data into account. By assuming a duality between extreme positions, the research subject becomes a reality to the researcher making it a challenge to 'unthink' the framing of the project. In this case all possibilities of overcoming the duality stay in the same frame that assumes a duality in the first place. The question remains of how we can imagine sustainable urban development outside the framing of this duality to avoid solutions that are framed in the same terms as the problems.

The antagonistic poles that shape the duality pose a challenge on the practitioner. A reasonable approach to tackle this issue could be to identify core values of sustainable cities and to define them through a collaborative process including a variety of stakeholders. This could make it possible to move closer to a shared understanding of sustainability as a

concept. In doing so, the process could be dominated less by the conceptualisation of sustainability of actors leading the process.



CONCLUSION

6. Conclusion

The Nordhavn project illustrates an attempt to approach sustainable urban development in a pragmatic way that integrates economic growth with a greener vision. The logic is to attract capital to the city through the production of a green image while creating a high-quality district based on environmental and social responsibility. The aim of the present research was to explore how the market shapes the sustainable urban development in Nordhavn against its sustainability vision. Taken together, the findings indicate that the green growth approach of sustainable urban development is highly influenced by the doctrine of economic growth. It also shows that, if used appropriately, market tools can be beneficial to encourage sustainability transitions.

The DGNB certification as a market tool had more influence on the Nordhavn project than initially assumed. Primarily, it aimed to serve as a win-win solution that attracts investors through additional financial gains while in return ensuring high sustainability standards for the planners. Here, the required DGNB certification worked as an incentive to overcome the problem that developers and investors do not include sustainable measures because of their intrinsic values. Therefore, DGNB makes it possible to raise the sustainability standards above the requirements of the building code. However, using market tools instead of laws and regulations to ensure sustainable development shows that institutional reforms are out of sync with the pace of market solutions. Ultimately, this process could replace political values and relegate statutory norms to a subordinated place. While the municipality is legally required to listen to a multitude of public opinions and societal groups, By&Havn does not stand under this legal obligation. In the end, they could commit only to requirements of DGNB for public decision-making to obtain the neighbourhood certification. Regarding public participation, inadequate laws and regulations might limit democratic decision-making processes for the sake of the government being more efficient and accountable.

The social housing quota strengthens the argument that the green growth approach of integrating economic growth and sustainable urban development is dominated by conflicting interests. While By&Havn are compelled to maximise profit, the municipality is under pressure to create affordable housing. In most cases, these social issues cannot be solved by the market and must be addressed by laws and regulations. However, the municipality transferred power and lands to By&Havn, a process that created an imbalance in power. The influence of the municipality remains limited beyond the local plans and the building code. In the end, the municipality gave away its power away to a degree that makes it difficult for them to interfere adequately where the market might fail.

The fact that By og Havn decided to use the DGNB standard of sustainability without challenging it or developing it further, shows how much the perceptions of sustainability of decision-makers shape the process. Instead of introducing the 25 percent social housing regulation, the municipality could have developed its own standard together with By og Havn that includes affordable housing and lives up to the same sustainability standards that municipal buildings have to fulfil. This supports the idea of Ulrich that 'almost everything planners do is related to their understanding of the problem' (Ulrich, 1988, p. 415). The understanding of the planners, however, is always based on their theoretical perspectives of looking at the world and making sense of it.

The idea of choosing the middle way between planning for growth and planning for green and socially responsible cities is theoretically grounded in ecological modernisation. The argument here is that change can result from within the prevailing forms of industrial states and markets. However, the Nordhavn case shows that the ecological modernisation approach is not sufficient to produce deeper socioeconomic changes. The case illustrates clearly that when solutions are framed in the same terms as the problems, the scope for democratic decision-making and reflexive governance approaches remains too narrow (Warner, 2010). For ecological modernisation to become an integrated approach and overcome the duality of market and sustainability visions, an ethical and epistemological shift has to take place that is able to initiate change in political behaviour. Therefore, critical positions that question the doctrine of economic growth and take social issues into account have a necessary place in helping redefine the governmental direction. The opposing positions that dominate the sustainability discourse are not necessarily hindering sustainability transitions but rather initiate readjustments of sustainable urban development strategies. Therefore, a reflexive governance approach that takes these different positions into account and builds on a learning process could help Copenhagen to become a frontrunner city in terms of sustainability.



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