Eco-city planning conditioned by the growth ideology: The case of Copenhagen

Jin Xue

Norwegian University of Life Sciences, Department of Landscape Architecture and Spatial Planning
jin.xue@nmbu.no

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Abstract
This paper aims to investigate how the eco-city planning is framed and conditioned by the growth ideology and propose an alternative urban development and planning for long-term sustainability inspired by the degrowth paradigm. Setting well-being, ecological sustainability and social equity as the goals of societal development, the degrowth paradigm differs from the growth paradigm in how to interpret and achieve them. Drawing on this distinction as a conceptual framework, this paper scrutinizes how the current growth-oriented planning for the Copenhagen Eco-metropolis in Denmark functions as a hindrance to the transformation to real sustainability. An agenda for reorienting eco-city planning towards degrowth is laid out by focusing on the purposes of planning and strategies for urban development in the domains of land use, housing and transportation. The paper concludes with pointing out the capitalist economic structure as the fundamental reason for the growth ideology embedded in eco-city planning and suggesting a degrowth alliance with urban planners to confront it.

1. Introduction

Since it is coined in the 1980s, many cities have undergone a transformation to eco-cities. At first glance, literally, the global proliferation of eco-city initiatives in urban policy and planning is a response to the growing concerns on local environmental problems and climate change. However, it is reported that eco-city is transformed in practice where political and economic neoliberalism provides the context conditioning the real interpretation of eco-city practice. Motivated by this critical stance on eco-cities, the aim of the paper is to study how the growth ideology is manifested and influences the development of Copenhagen eco-metropolis and its limitations in delivering long-term social and environmental sustainability, and discuss the potentials of an alternative urban development and planning inspired by the degrowth paradigm.

The paper is structured as follows. In section 2, the degrowth paradigm is contrasted with the current growth paradigm, with the purpose of providing a theoretical understanding of the societal background of urban development and planning and setting out a normative conceptual framework for degrowth planning. The contrast revolves around the distinctive interpretations of and approaches to well-being, ecological sustainability and social equity by the two paradigms. Section 3 analyses how the current urban planning for Copenhagen Eco-metropolis is shaped by the growth ideology, followed by a discussion on the limitations of such a planning paradigm. As a response to the analysis, section 4 lays out an alternative planning paradigm informed by the degrowth paradigm for long-term environmental sustainability and social justice. Finally, the concluding section provides reflections on how the growth imperative derived from the socio-economic

structure shapes the growth-oriented planning and functions as the deep-rooted barrier to degrowth transformation, and argues for the potential proactive role of urban planners in confronting it.

2. The contrast between the growth and degrowth paradigms

Faced with multiple crises characterized by ecological deterioration, social injustice, and economic recession, degrowth is put forward as a possible alternative to the economic growth paradigm in response to these crises (Bonaiuti 2012; Schneider et al. 2010). Simply put, degrowth challenges the hegemony of growth and calls for a democratically led redistributive downscaling of production and consumption in industrialised countries as a means to achieve *environmental sustainability, social justice and well-being* (Demaria et al. 2013: 209, emphasis added). By radically confronting the configuration of contemporary socio-economic structures and their associated norms and values, degrowth represents a new paradigm in economic and societal spheres and attempts to construct an alternative sustainable future. The streams of thoughts constituting the degrowth movement are diverse, embracing bioeconomics, quest for deeper democracy, social justice and equity, culturalist critique on development, anti-utilitarianism movement, meaning of life, and environmentalism (Demaria et al. 2013; Muraca 2013; Schneider et al. 2010).

Degrowth is a normative project in the sense that its goal is pursuit of well-being, ecological sustainability and social equity (Schneider et al. 2010: 502). Arguably, these goals are also shared by the growth paradigm. However, the two paradigms differ greatly in how to interpret the connotation of these concepts and through which approaches they can be obtained. Generally speaking, degrowth adherents believe that human prosperity without economic growth is possible (Jackson 2009; Victor 2008), while for growth advocates, economic growth is a necessary pre-condition for the achievement of societal progress.

For the goal of well-being, degrowth dismisses the prevalent utilitarian way of defining quality of life as maximizing individual utility by satisfying preferences. Under the prevailing neoliberal agenda, competitive market mechanism through providing an extensive set of choices of commodities is often claimed to be able to fulfil peoples preferences and enhance happiness (Sen 1993). This creates a life-style trapped in materialism and consumerism wherein people work more in order to get the freedom to consume more. However, the lack of proportionality between increase in purchasing power and happiness, a phenomenon known as the Easterlin Paradox (Easterlin 1974; Inglehart & Klingemann 2000), makes the utilitarian and neoclassical economics approach to well-being rather untenable. In the view of degrowth, modern growth society through unfettered supply of commodities and services forces people to become increasingly dependent on material goods and thus deprives people of the freedom and autonomy to satisfy their own needs (Deriu 2015). Instead, degrowth confronts the meaning of well-being based on possession of material wealth, and believes that people can live meaningfully and happily by maintaining a minimally sufficient material living standard, i.e. voluntary simplicity, in exchange for more time and freedom to pursue non-materialistic sources of satisfaction and meaning (Alexander 2015).

Regarding ecological sustainability, the idea of decoupling economic growth from adverse environmental impacts through technological efficiency strategies dominates the environmental discourse in the growth society (WCED 1987). The belief in green growth is strongly influenced by the ecological modernization theory which portrays a paradigm reconciling economic growth and environmental sustainability within the capitalist organization of production and consumption (Spaargaren 2000). In light of the decoupling idea, continual economic growth is a prerequisite for successfully dealing with environmental problems, a contention partly derived from the so-called

environmental Kuznets curve hypothesis (Barry and Paterson 2003). The possibility of maintaining economic growth through decoupling has been questioned by growth critics who argue that absolute decoupling is implausible and even a delusion (Nørgaard 2009). Empirical evidence investigating the extents of decoupling both at the aggregate economy level and sector level substantiate this critique (Azar et al. 2002; OECD 2002; Tapio 2005; Xue 2012). In addition, as with increasing purchasing power due to economic growth, eco-efficiency improvements are likely to generate rebound effects, offsetting the expected environmental benefits or even making the efficiency strategy counterproductive (Alcott 2005; Schneider 2008). Hence, as argued by the degrowth advocates, the key to reduce the environmental impacts as much as is needed in order to stay within the biophysical limits of the planet consists in the reduction in the scale of the total economic output (Martinez-Alier et al. 2010). The sufficiency strategy seeking to lower the affluence level in the Global North is proposed as the way to cope with unsustainability.

The goal of equity is multi-faceted. It refers to social equity across space, i.e. intragenerational equity, across time, i.e. intergenerational equity, and environmental justice (Arler 2001). It is widely assumed by the growth proponents that economic growth is a necessary pathway to a more equitable society both locally and globally through the trickle-down mechanism, whereby th benefits of growth will spread and eventually benefit the worst-off parties (WCED 1987). In terms of intergenerational equity, although it is admitted that the continuation of current growth rates will result in higher risks of undermining the capacity of succeeding generations to create well-being, the depletion of natural resources may lead to a number of substitutions that defenders of weak sustainability rely on (Beckerman and Pasek 2001). However, degrowth refutes the trickle-dow assumption by pointing out the more pronounced relative poverty during the latest decades of economic growth (OECD 2008; Stutz 2010). Furthermore, the prevalence of neoliberal policies as a global trend will reinforce the inequality tendency of economic growth (Harvey 2005). The viewpoint represented by weak sustainability is criticized to ignore the irreversibility of key and fundamental functionalities of nature once they are destroyed, which makes substitution rather limited (Ekins 2003). In order to save ecological space for following generations and for people living in poor countries where economic growth really makes a difference, degrowth holds an ethical stance of distributive justice achieved by less competition, large scale redistribut sharing and reduction of excessive incomes and wealth (Demaria et al. 2013: 199).

3. Growth-oriented urban planning for eco-city and its critiques

3.1 The case city and methodology

Employing the discussion above as a conceptual framework, the main task of this section seeks to unfold how the eco-city planning for Greater Copenhagen are framed by the growth ideology and discusses the limitations of it in delivering sustainability and equity. Based on the moral premise that ecological space is to be left for poor nations, transition to sustainable degrowth should take place in wealthy countries and is of necessity and urgency to cities in the developed world. Since Greater Copenhagen represents a typical metropolitan area of the Western Europe, it is illuminating to look at how planning is dominated by the growth ideology and the challenges of implementing a degrowth-oriented planning for such a city region. In light of this, the Copenhagen case can be understood as a *representative* case, the lessons learned from which are assumed to be informative about the experiences of similar city regions (Yin 2009). Furthermore, with Copenhagen being internationally known for its sustainable development agenda and non-motorized urbanism model (e.g. it has recently won the award of European Green Capital 2014), a critical scrutiny will show how limited the growth paradigm is in delivering long-term sustainability and social justiceIn this sense, the presentation of Greater Copenhagen is put forward as a *critical* case.

Defined by The Danish Planning Act 2007, Greater Copenhagen is a cohesive functional metropolitan area across municipal borders, covering an area of 3132 km^2 and consisting of 34 municipalities with the municipality of Copenhagen the most populous. It had in the beginning of 2014 about 1.97 million inhabitants. The spatial development of Greater Copenhagen has back to the 1940s been planned into a finger structure and could be characterized as hierarchical polycentric. The downtown Copenhagen has an unchallenged status as the dominating center. The central parts of five towns in the fingers form the second-order centers, along with some major regional retail districts included in the continuous urban area of Copenhagen. The third-order centers are those more local centers in connection with urban rail stations and smaller-size municipal centers.

Greater Copenhagen has a long tradition of spatial planning on the regional scale, which can be traced back to the first finger plan in 1947. The original ideas behind the plan have laid a foundation for succeeding plans at the regional level and strongly impacted the spatial development of the city region. Until the local government structural reform in 2007 in Denmark, the planning authority for the Greater Copenhagen lied in various metropolitan institutions, the last one being the Greater Copenhagen Authority (Hovedstadens Udviklingsråd), who prepared the last regional plan 2005. Since 2007, the metropolitan institution was abolished and planning authority for the Greater Copenhagen was transferred to the Ministry of the Environment, who made the national planning directive titled Fingerplan 2007 for the city region based on regional plan 2005. According to the Planning Act 2007 (Ministry of the Environment 2007b), this directive aims at providing guidance for the spatial development of the metropolitan area and is legally binding for the municipal planning in the city region. According to Olesen and Richardson (2012), the Fingerplan 2007 on one hand represents a conscious ministry attempt to strengthen the spatial framework for the metropolitan area, and on the other hand allows the municipalities to designate areas for local urban development through only regulating designation of urban development of regional character.

The analysis of the case is mainly informed by a critical scrutiny of key official plans published at different governmental levels, including the 2006 National Planning Report, the Danish Transport Infrastructure 2030, Fingerplan 2007, Regional Plan 2005 for the Capital Region, and the 2011 Municipal Plan for Copenhagen. The analysis of the plans seeks answers to three questions: Is economic growth formulated as a goal of urban development and planning? How is the growth ideology embedded in the understanding and pursuit of well-being, environmental sustainability and social equity? And what are the concrete planning strategies for urban development? In so doing, the analytical focus is on the goal-setting and contents of plans instead of how plan-making is carried out. The investigation of planning strategies will concentrate on land use, housing development and transport infrastructure. Although other components of spatial urban development, such as retailing, public facilities and industry, are also important in terms of their consequences on environmental sustainability and social justice, given limited space, I have decided to focus on the three above-mentioned aspects.

3.2 The manifestation of growth-oriented planning

A shift in the role of planning from growth management to growth stimulation

The purposes and agenda of state spatial planning in Denmark has undergone constant reorientation since its genesis in the mid-20th century. Since the late 1980s, following a similar trajectory of many European countries, the Danish national planning has typically shifted from a welfarist approach addressing balanced and equal development across the country to a neoliberal approach in the pursuit of competitiveness by stimulating growth in major cities and regions (Galland 2012; Olesen

& Richardson 2012). The early planning emphasis on equalization across Denmark in the 1950s was a response to the negative socio-spatial consequences from rapid economic growth and imbalanced concentration of economic growth and population in the eastern part of the country and in the capital. The objective of equal development fits well with the idea of spatial Keynesianism that the state seeks to equally distribute welfare services, economic activities, population and investment across the entire country. Throughout the 1960s and 1970s, equal development has remained a central objective in the Danish national planning. These periods were characterized as rapid economic growth and planning can thus be seen as playing the role of *growth management* which aims at distributing economic development in a spatially equal way.

However, the economy in the 1980s and 1990s experienced periods of stagnation and recession. Together with globalization as the main driving force and an emerging neoliberal political climate in Europe, it has promoted a growth-oriented planning in order to strengthen Denmark s competiveness and secure its position in the global economy. Since the 1990s, planning has been gradually advanced as an instrument to *stimulate growth*. The discourse on planning towards economic growth culminated in the 2006 national planning report, wherein the vision of the government for spatial development in Denmark is evidently manifested in the title planning for economic growth (Ministry of the Environment 2006: 10). Spatial planning should play an important role in pursuing growth and enhancing competiveness:

> getting globalization to continue to positively influence Denmark and its
> that Denmark strengthen its ability to create innovation and to develop solutions that add value
> and cannot easily be copied They place demands on spatial planning, which m
> Denmark s special qualities and nature and also create a favourable framework
> actors as companies, knowledge institutions and employees and ensures that they thrive. (*ibid.*: 8)

The consequences of this neoliberal turn on planning are not only confined to the substantive aspect that focuses on creating a spatial environment that can promote economic development, but involves the liberalization of market in providing and allocating goods and services. The role of planning is changed from the provider of welfare to the enabler of development.

The shift of state spatial strategies from equal development to growth and competiveness is of significance to the planning for the Greater Copenhagen. For a long time until the late 1980s, the capital region has suffered from the planning objective of equal development, which attempted to contain growth in workplaces and populations in the Greater Copenhagen (Hansen et al. 2001). When strengthening the international competiveness of the capital became a national interest, the national policy for Greater Copenhagen skewed towards growth stimulation . Th Greater Copenhagen as the locomotive for all of Denmark in the global competition is highly emphasized: A strong and competitive capital city is an important prerequisite spatial development. Denmark must have a capital that can attract companies, jobs and employees in global competition (Ministry of the Environment 2006: 11). This has led the national priority for the Greater Copenhagen to ensure that spatial planning strengthens its international competiveness (*ibid.*: 16).

With the awareness that urban region s physical design is a decisive competiti of the Environment 2007a: 8, author s translation), the Fingerplan 2007 is committed to enhancing the quality of living and working environment in order to attract business, private sectors and entrepreneurs. A similar vision is highlighted in the latest Copenhagen municipal plan, as stated by

the Lord Mayor in the preface that: The City of Copenhagen Municipal Plan 201 economic growth in the entire Øresund Region while at the same time maintaining Copenhagen as a good city to live in and to visit (City of Copenhagen 2011). The Copenhagen municipality even goes further to target an average annual growth rate of 5% up to 2020 (*ibid.*)[1].

Growth ideology embedded in planning

Both the national government and local authority of Copenhagen consider the commitment to growth is of importance to the pursuit of well-being and prosperity. The framing of planning at the national level steered by the growth and competiveness rationality is seen as necessary in order to meet the demands set forth by globalization and to secure Denmark s future prospect the Environment 2006). The attainment of growth in the capital region is crucial not only for the development of the region, but also for the whole country s growth prospects Environment 2007a: 8). In the Copenhagen municipality, it is believed that growth and go hand in hand because the sectors which the city lives by support a greener, healthier and more exciting city (City of Copenhagen 2011: 15).

The emphasis on growth in spatial planning goes alongside a concern on nature and environment. Copenhagen has a strong vision of being a green growth metropolis where environment and growth go hand in hand. One one hand, it is believed that Copenhagen municipality can become the first carbon neutral capital by 2025 while increasing employment and spurring growth, reflecting the decoupling notion in planning. On the other hand, the motivation of being green is to further strengthen the region s competitive edge and attract investment and business. Both national and local planning authorities are very aware of how urban competitiveness itself partly relies on the sustainable remaking of urban environments. As stated in the 2006 national planning report: G spaces, recreational areas and attractive urban environments are key prerequisites for attracting companies, jobs and employees. The municipal councils should therefore give high priority to valuable landscape, natural and cultural features (Ministry of the Environment 2006: 17 Municipality of Copenhagen aims to become the green growth hub through attracting clean-tech enterprises and investments that will become the city s new growth engine and generate new jobs (City of Copenhagen 2011). In addition, successful reduction in carbon emissions will become a showcase of Copenhagen and Denmark s leading role in global environmental developmen Interestingly, even green growth *per se* is regarded as a competition field where the world s cities are fighting hard to top the green growth agenda If the city does not have a clear strategy and remain in control, Copenhagen is at risk of becoming marginalized in low-growth Europe (*ibid.*: 26).

At the national and metropolitan levels, this growth-oriented planning has predominantly focused on economic development and environmental sustainability, leaving the social aspects largely in the background. The concern on equal distribution of public resources and welfare, a primary goal of early planning, is almost out of the picture. Only in the Copenhagen municipal plan has the challenge of social and health inequality in the disadvantaged residential areas been briefly mentioned.

Fragmented planning strategies

Greater Copenhagen has a long history of spatial urban expansion in the 1960s and 70s, leading to a sharp decline in population densities within the inner city and a low-density residential development characterized by single-family homes in the suburbs. This trend began to reverse in the mid-1980s

[1] Its current GDP growth rate is slightly below 2%.

since when the urban expansion has stagnated with slight increase in population density within the inner part of Copenhagen. However, in the suburbs, and in particular in the parts of the metropolitan area located outside the continuous urban area, development has still predominantly taken place as spatial urban expansion (Xue et al. 2011).

Stipulated in the Fingerplan 2007, new urban zones cannot be designated in the inner part of the metropolitan area where development should take the form of densification and redevelopment of brownfield areas. However, in the outer part of Greater Copenhagen, despite the oversized scattered development and low population density which was around 22 persons per hectare in 2008, densification has not been suggested as a major land use strategy. Instead, municipalities along the five fingers are allowed to convert rural land to urban areas as long as they can justify the development. In the rest of the metropolitan area, new urban development of local nature is still permitted. Locating new developments close to urban rail stations is strictly regulated in the finger plan and a high density near the stations is sought for. According to this plan, urban functions of intensive use should be located less than 1000 m from an urban rail station and preferably within 500 m.

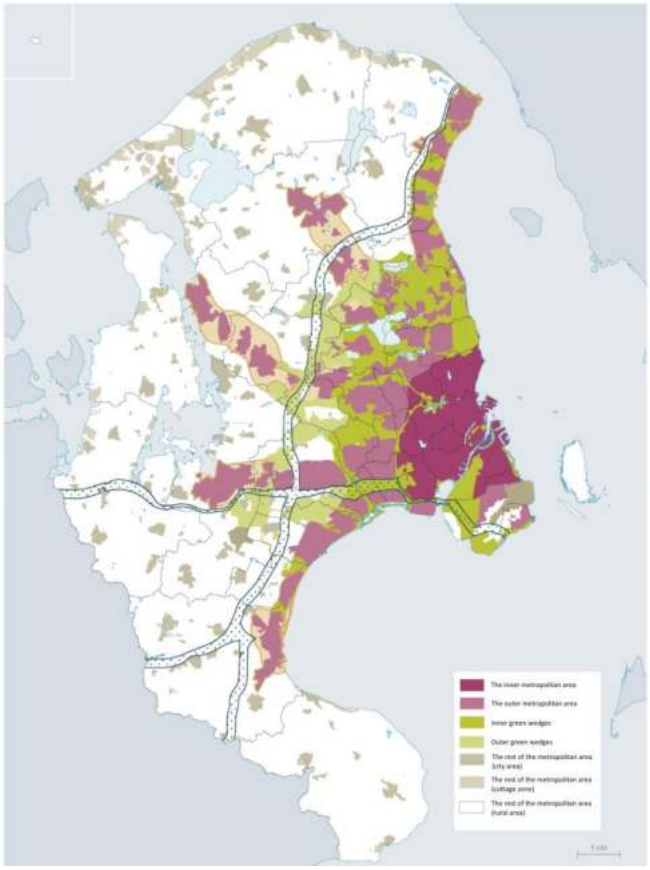

Figure 1. Geographic demarcation of Greater Copenhagen and its finger structure (Source: Ministry of the Environment 2007a).

Planning for transport infrastructure is based on a predicted ever-increasing mobility and traffic volume. In the report The Danish Transport Infrastructure 2030, mobility is considered a element in the competiveness of businesses and thus for the growth conditions of Danish soci (Danish Infrastructure Commission 2008: 306). It is taken for granted that traf

according to our prosperity (*ibid.*: 36). Although there is an awareness that expected increases in traffic volume will strain the environment, channeling large part of the traffic growth to public transport is recommended as the solution. In Greater Copenhagen, traffic flows have been primarily towards the central part of the metropolitan area, accommodated by the five radial transport corridors. Today, it is argued that transport infrastructure should be provided to strengthen the ring connections across the five figures so as to accommodate increased traffic flows from commuting across the region (Ministry of the Environment 2007a). This intention to intensify regional economic activities leads to the approval by government of a new inner-city metro circle (Cityringen), adding to the already extensively networked metros and S-trains (City of Copenhagen 2011). Initiatives enhancing the ring connection also include a light rail (Ringtre) that will connect 11 Copenhagen suburban municipalities, with the expectation of promoting urban development along the rail and easing congestion issues in the region (The Ringby Light Rail Partnership 2013). Although these infrastructures are provided in the form of public transport, they are all aimed at enhancing mobility and economic activities. Arguably, the increase in the aggregate traffic volume may offset any environmental benefits from such strategies.

Already one of the leaders in cycling infrastructure, the municipality of Copenhagen continues its efforts to increase the share of biking for commuting trips through improving physical conditions for accessibility and expanding the bike network. A variety of initiatives have been carried out to support cycling (cf. Nielsen et al. 2013 for an overview), some of which have also been extended to the metropolitan area. In cooperation with the Capital Region and 17 surrounding municipalities, a new initiative called Cycle Super Highways (cykelsuperstier) is established targeting commuters who travel long distances between 5 and 20 km.

On the other hand, increasing road capacity, e.g. the harbor tunnel project, has been part of the transport policy in Greater Copenhagen, with the motivation to eliminate existing or projected future congestion. An economic rationality has underlined this motivation, as motorway and railway capacity is considered a bottleneck for the economic growth in the Øresund region in the longer term (City of Copenhagen 2011). One of the main recommendations proposed by The Danish Infrastructure Commission is to complete the ring connections in the Copenhagen area both on roads and rail (Danish Infrastructure Commission 2008). Moreover, municipalities in the metropolitan area are required to reserve space for future road expansion and extension (Ministry of Environment, 2013).

In Greater Copenhagen, after decades of growth (with stagnation in the 1990s and slight decline in 2010 as a result of economic crisis), the average residential floor area per capita has reached 51 m^2, among the highest standards in the world. Seen in a shorter and more recent period, the share of detached single-family dwellings in the total new housing stock has declined from over 30% in the second half of the 1990s to a level of 12% after 2000. Even though the majority of the new dwellings have still been located in the rest of the metropolitan area, the inner city has shown a tendency of increasing its share of the total number of newly completed dwellings.

Housing strategies in the Greater Copenhagen are to ensure that there is a plentiful and varied supply of housing opportunities (Hovedstadens Udviklingsråd 2005). In the regional plan 2005, based on projected population growth, replacement of existing housing and expectation of increasing housing standards, it is estimated that there is a lack of 75,000 dwellings that needs to be built over the period 2005 2017. The guidelines for the densities and types of new housing differ in different parts of the metropolitan area. Residential development in the inner city will take place in the form of densification and urban renewal and the type of housing to be built is confined to

apartment buildings. In the inner parts of the fingers, although concentrated types of housing, such as apartment buildings and compact and low-rise housing are recommended, single-family houses can also be added. Land regulation in the outer parts of the fingers is further relaxed where the designation of new urban zone for housing purposes and the construction of space-consuming types of dwellings are allowed. It can be seen from these strategies that the impacts of housing types on environment and transport are downplayed in the plans of Copenhagen, which do not dare challenge the predominant preference for single-family houses among citizens. Seen from the above examination, under the growth paradigm, the urban development plans of Copenhagen exhibit a feature of fragmentation and even internal confrontation. Growth-oriented planning has the potential to result in fragmented measures with some tilted to growth and others to environmental protection. It tends to confine environmental policies to those that can enhance a ci edge, while constraining other, more radical environmental measures incompatible with growth.

The fragmentation of planning strategies reflects the idea behind urban planning that through creating opportunities in the built environment enlarges citizen s freedom of choices so that different preferences can be satisfied. As formulated in the national planning, spatial planning should ensure diversity and continue to prevent everything from becoming unifo the Environment 2006: 11). Urban planning has done this mainly via two approaches. One is the supply of efficient and reliable infrastructures to enable people to choose residences, workplaces, and functional facilities on a larger geographical scale, such as the proposed ring connection in Greater Copenhagen. The other is to offer a rich variety of products in the built environmen meet different demands, such as infrastructure provision for car, public transport and cycling, and a diverse supply of housing with different types, geographical locations, densities and amenities. From this perspective, the differentiated components in the planning strategies can be viewed as different products provided for diversified market segments (Næss and Vogel 2012).

3.3 Critiques of growth-oriented planning

There are several arguments against the belief in and the possibility of decoupling urban economic growth from its negative environmental impacts. The Greater Copenhagen case indicates that the pursuit of economic growth entails the construction of new building stock and expansion of infrastructure (either on brownfield land or new urban area), which both constitutes part of economic growth and accommodates increased economic activities. The growth in the physical elements is heavily reliant on material, energy and land resources, in addition to the energy consumption induced by the use of these physical structures (such as building operation, travel-related energy consumption). Densification and creating a compact urban structure, as illustrated in the planning strategies for the development of Copenhagen, can to some extent prevent rural land from converting to built-up areas and reduce energy consumption of transportation. However, there is a limit to what the densification strategy can fulfil, as the opportunities for densification will sooner or later be taken up and continuous growth will then have to be channelled to undeveloped land. Resource and energy saving benefits from eco-efficiency measures in the field of urban planning represented by high density land use and promotion of public transport tend to be counteracted by growing traffic volume and consumption level in the floor area. Unless the increases of eco-efficiency can catch up with the growth rates of the building stock and traffic volume, the absolute environmental impacts will increase.

As indicated in the Greater Copenhagen case, an overall planning strategy facilitating consumerism and diversity to meet different tastes implies a mixture of sustainable and unsustainable strategies to urban development. People have different preferences and differentiated economic and social capabilities to make free choices. The better-off usually can afford a luxury and environmentally-

unfriendly lifestyle, like spacious dwellings and car driving. Hansen et al. (2001) reported that growth stimulation policy in Copenhagen embraces the housing policy as an instrument to attract a so-called economically sustainable population to reside in the capital reg constructing spacious, expensive and upscale housing. This segment in the planning strategies will largely counteract the overall environmental benefits derived from strategies that adapt the development of land use, housing and transport towards a sustainability direction. Without a consistent and coherent planning strategies, sustainable and unsustainable solutions will end up with competing each other, leading to an inefficient investment in infrastructure and attempts for urban sustainable development.

Having said these, empirical studies on the environmental performances of Greater Copenhagen s urban development reveal that growth in land conversion for urban purposes has been relatively decoupled from metropolitan economic growth during the period 1991-2008, suggesting an expanding urbanized area though at a lower growth rate than the economy (Xue 2014). The same finding applies to the residential energy consumption which despite Denmark s high building energy standard has experienced growth at the aggregate level due to increased aggregate floor space and possession of domestic appliances (*ibid.*). The discussion above points to that attempts to resolve the tension between growth stimulation and environmental sustainability through a green growth approach are subject to limitations and not adequate in leading to reducing absolute environmental impacts from urban development in the long run, in particularly when green strategies are themselves considered as a trigger for further growth.

The social consequences of growth stimulation planning are dependent on the approach through which the growth is allocated. There is a difference in the impacts between a Keynesian approach with strong public intervention to ensure that urban development benefits all societal groups, and a neoliberal approach with market playing the major role in leading urban change and distributing benefits and burdens. As Rydin (2013) notes, planning reliant on the market to generate growth is likely to reinforce socio-spatial inequality through gentrification that displaces local residents and gives more location choice to higher-income groups than those with lower income. As indicated before, the distributive function of Danish spatial planning rooted in Keynesianism is under a neoliberal transformation (Andersen and Pløger; Olesen 2011). The shift to market-led planning does not only take place at the level of strategic spatial planning, but also in urban renewal project, waterfront redevelopment (Galland and Hansen 2012), and housing policies (Vagnby 2008), generating socio-spatial consequences such as gentrification, segregation, ghettoization, and housing unaffordability.

4. Reorientation of eco-city planning towards degrowth

The previous discussion shows that planning of Copenhagen Eco-metropolis in its current form is employed as a vehicle for the pursuit of economic growth and underpins the growth-associated norms and values. This section sets out to expound the implications of degrowth for urban development and planning and propose an agenda for eco-city planning that is committed to the degrowth-oriented interpretation of well-being, sustainability and equity.

4.1 Socially sustainable degrowth as the purpose of urban planning

Planning informed by the degrowth paradigm should discard some of the taken-for-granted but misconceived assumptions underlying the current planning strategies that are evident in the Greater Copenhagen case. These include the ideas that growth is the primary goal of urban development, ever-increasing mobility is essential for prosperity, planning should satisfy different preferences by

enlarging freedom of choice, and economic growth can be reconciled with environmental sustainability. The degrowth-oriented planning would require to amend the national planning report and finger plan to reflect the central ideas of degrowth. Growth and competiveness as the primary vision of planning should be substituted by societal goals with reference to well-being, sustainability and equity.

Degrowth emphasizes the non-materialistic sources of well-being apart from the achievement of minimally sufficient material living standard, which implies that planning should not prioritize the way of land use and types of infrastructure that fulfil the need for productivity and economic efficiency. Instead, planning will be people-oriented rather than profit-oriented, prioritize use value of land over exchange value, and seek to improve city and neighbourhood liveability (Brenner et al. 2012). The remaking of an attractive urban environment is not for the sake of attracting inward investment and creative class, but aims at enhancing the liveability of local residents.

Although environmental sustainability is already given emphasis in planning, it is framed in the conceptual setting of ecological modernization with a focus on efficiency. A degrowth approach to sustainability would require planning apart from addressing efficiency to draw on the sufficiency in urban development in relation to mobility, land use, residential floor space and infrastructure. It is proposed that planning should purposely and in a socially sustainable manner reduce, first the level of consumption per capita, and then shrink the total volume of urban built environment and decline mobility in order to reduce energy consumption and carbon emissions, protect rural land and the integrity of habitats of other species.

A commitment to social equity which is neglected in current planning should be incorporated as one of the goals explicitly formulated in planning documents. Social equity refers to the pursuit of distributive justice and democracy in urban planning. Here, planning will strive for an equal distribution of environmental hazards and benefits, ensuring the access to affordable housing, public facilities and transportation for the low-income groups (Fainstein 2010). Social issues like social segregation, housing unaffordability, ethnic integration and ghettoization should draw more attention from urban planners.

4.2 Degrowth-oriented planning strategies for eco-city development

Planning strategies for land use

In Greater Copenhagen, principles of land use including densification on brownfield sites has been adopted in the inner part of the metropolitan area, while the peripheral areas are left with rather relaxed land regulation allowing the conversion of rural areas into urban zones. In the context of strong inter-municipal competition, local authorities in suburban municipalities will tend to employ generous supply of vacant land as a vehicle to attract investment, leading to low-density outward urban sprawl. Suburban expansion is more likely to contribute to increased need for transportation due to on average long distances between destinations and to increased need for motorized modes of transport (Næss 2012; Stead and Marshall 2011). Although the latter tendency is meant to be remedied by the principle of station proximity that encourages public transportation, this will only counteract the negative environmental impacts from increased aggregate traffic volume to some degree. Given the fact that the density of the outer part of Greater Copenhagen is already very low which provides opportunities for densification, an amended land regulation banning the conversion of rural areas to urban zones in the finger cities should be favoured in the finger plan.

Locating offices and residential development close to rail stations discourages car travel, but does not contribute to reducing the total amount of traffic. In general, there is a lack of concern in the finger plan on the traffic impact of locating different urban functions relative to the main city centre. Studies have shown that increasing distance from residence to urban centres is associated with increasing travel distance (Næss 2012; Stead and Marshall 2011). In recent two decades, residential development in Greater Copenhagen has shown a trend of concentration. If new dwellings are going to be built in future, an emphasis on proximity to the downtown Copenhagen should be reinforced in the metropolitan plan.

High-density urban development, despite its positive effects on energy saving and preservation of natural land, does not go without negative consequences on certain aspects of well-being (Neuman 2005). Residents living in dense urban areas are exposed to higher levels of noise and air pollution and run higher risk of traffic accidents. In addition, densification may deprive citizens of opportunities for access to city greenery by building on green areas. The lack of greenery, nature and outdoor activities may be compensated for by possessing second homes a rebound effect that undermines the effectiveness of planning strategies for sustainable urban structure (Strandell and Hall 2015). These potential negative impacts suggest the limitations of the densification strategy based on an assumption of ever-growing building stock and infrastructures. Urban development in the degrowth society will therefore aim at non-growth or even shrinkage of the size of built-up area and volume of the building stock, a topic that will be dealt with in the next section.

Planning strategies for residential development

As mentioned before, sufficiency in consumption is proposed as an organizing societal principle in the degrowth paradigm in order to reduce absolute consumption. This strategy is apparently highly relevant to the consumption of housing. Considering the high housing standard in Greater Copenhagen, it is pertinent to ask if further growth in per capita floor area is morally acceptable if an equal distribution of natural resources on a global scale is to be achieved. Moreover, a further growth is probably not socially necessary since the contribution of material goods to well-being tends to decline above a certain level. In view of the degrowth planning, the goal of residential development should be non-growth or even shrinkage in residential floor area on per capita basis and avoid inequality in access to housing. Such a view will have implications on the amount, composition and location of future housing supply.

The total amount of new housing measured by floor area therefore should be based on projection of population growth and annual replacement of existing housing. In the regional plan 2005, the prediction of housing growth, apart from these two segments, also took into account an expected rise in the average housing standard. This latter segment should therefore be excluded in planning for residential development in the degrowth paradigm. Stabilization or even shrinkage of per capita floor area also implies that the construction of space-consuming type of housing, i.e. detached single-family dwellings, should be discouraged in future. Therefore, the existing plans that allow the construction of this type of building in the outer areas of Greater Copenhagen should be amended. This requires planning to confront the idea that the supply of housing should be varied so as to meet different tastes and demands. A maximum standard of per capita consumption of residential space can be stipulated in planning documents as a control of the volume of housing supply.

Houses to be demolished annually should be the least environmentally friendly ones, like single-family homes in highly car-dependent suburban areas disconnected from the inner city, and dwellings with poor thermal performance. Suburban brownfields where the o

dismantled can be used for nature regeneration. On the other hand, the replacement of those demolished dwellings should take place as densification with availability of public transport and other city facilities and take the form of concentrated types of dwellings (Næss 2011).

With a ceiling on the consumption of residential space, every increase in floor area per capita among some population groups must be balanced by reduced floor area per capita among some other groups. The poor are usually the losers in such a situation because a limit on the size of the housing stock will induce housing scarcity and push up housing prices. The issue of social inequality can be worsened if no proper policies are in place. Under the neoliberal political climate, urban planning for the Greater Copenhagen area has gradually shifted away from focus on certain social groups, but given way to market to determine how wealth, such as housing, is distributed. Driven by market profits, development aims at meeting the needs of people who have purchasing power and consequently those low-income groups are in face of housing unaffordability. Social justice in the degrowth paradigm calls for the redistribution of wealth and pays more attention to the vulnerable social groups. The interests of the marginalized and vulnerable population should be fully represented by urban planners, who would to some extent need to work as advocates.

First buyers and needy families would demand redistribution measures like subsidies or tax reduction. Tax can be levied on empty owner-occupied dwellings to reduce overconsumption of living space. Some present institutions can be made use of as part of the redistributive strategies. For instance, social housing - traditionally an important part of social welfare in Denmark can be used permanently for renting. In the same vein, the long tradition of rent control in the rental market needs to continue. In addition, economic incentives and planning strategies can be employed to encourage cohousing and reusing empty dwellings (Lietaert 2010).

Planning strategies for transportation

In line with the degrowth paradigm, Banister (2008) proposed a sustainable mobility paradigm that focuses on people and accessibility instead of mobility, and aims at slowing movement down rather than speeding up traffic. This represents a departure from the current transportation strategy in Greater Copenhagen based on the idea that increasing mobility is a symbol of prosperity. The implication is that initiatives to expand motorways and increase road capacity in Copenhagen and reserve land for such infrastructure in order to facilitate economic activities with Malmö in Sweden should not be prioritized. Instead, planning strategies will aim at reducing traffic volume through proximity, rather than triggering more traffic by encouraging commuting from a wider area.

Besides aiming at reducing traffic, the degrowth planning will also change the composition of transport infrastructure supply in favour of more transit-oriented development and non-motorized modes of transportation. It requires a significant increase in the environmentally friendly elements such as biking infrastructure, walkable neighbourhoods, and better public transport services, replacing those that facilitate resource-demanding and polluting activities, such as high-speed transport infrastructure.

5. Conclusion

This paper has illustrated that eco-city planning for Copenhagen is conditioned by the growth ideology which seeks to reconcile the strategies for dealing with the pressure of environmental degradation with strategies for city competitiveness. Such an eco-modernistic eco-city planning leads to fragmented planning strategies for urban development and abstain the implementation of more radical solutions to urban sustainability transition. With the awareness of the limitations of the

eco-city planning under the growth paradigm, the paper attempted to propose an alternative planning paradigm informed by the degrowth debates which focuses on the pursuit of human prosperity without economic growth.

When asking why the growth ideology is the very essence of urban planning and the dominant driving force of built environment formation, the answer lies in the growth imperative inherent to the capitalist market economy (Gordon and Rosenthal 2003; Harvey 2010). The significant role of cities in perpetuating and expanding capitalist accumulation through the arrangement of built environment has long been discussed (Harvey, 2010; Lefebvre 1974/1991). Land use and built environment are wrought to adapt to the needs of capital, and provide necessary physical conditions to facilitate the capitalist production, consumption and exchange processes. As a consequence, propelled by the growth compulsion from the deep economic structure, promoting local economic growth and enhancing the city s competitive edge have become the most ambitiou local government. It therefore suggests that degrowth transformation necessitates a political movement to establish a new kind of socio-economic structure beyond the capitalist market economy (Fotopoulos 2007; Kallis 2011). In this respect, urban planners can be a mobilizing force through involving widespread public participation in the planning process to catalyse collective critical consciousness on current society, enhance public awareness of sustainable choices, build strategic alliances, and advocate vulnerable people (Rankin 2012; Rydin 2013).

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