

Urban densification – a sustainable urban policy?

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Abstract

Planning policies in many European countries advocate for the Compact City or some sort of compaction process, as a strategy to obtain a more sustainable urban development. It contrasts the car-oriented urban sprawl of many modern cities, creating longer distances between urban functions, poor access to facilities and services, less efficient infrastructure provision, loss of open land, social segregation, etc. A Compact City policy in contrast should by regeneration and densification of the urban area create the opposite, thus contributing to a more sustainable development in its broadest sense, social, economic and environmental. This paper explores the implications of urban densification. Based on a case study of a Copenhagen district, the paper will show the pros and cons of urban densification and the impacts on the urban environment, focussing on the local urban environment. The casestudy will be used to conclude whether densification and compact city policies can lead to a more sustainable urban environment.

1 Towards higher densities and sustainability in the 1990s

Danish national government has supported a sort of densification policy since the mid1990s. The turn in the 1990s towards higher densities in urban areas was happening due to several circumstances. The believe was that higher densities would assist in achieving sustainable urban development thus addressing the challenges of the Brundtland report from 1988. By creating higher densities it would be possible to support efficient infrastructure, create shorter distances between urban functions and thus all in all improve the energy efficiency of the

urban area in the transport- and energysector. In the Copenhagen region this was coupled with a policy aimed at concentrating urban development around railway stations in order to support public transport.

Secondly, it was seen as important to halter urban sprawl and the negative effects on the social and economic development of central urban areas: the movement towards the fringe of residents and business created social segregation and financial problems.

All in all the change in planning policy in the 90ies reflected a change from a decentralisation policy to an urban policy aimed at achieving more dense multifunctional urban areas with urban qualities. The ideals behind this change in urban policy was very much inspired by the Green Paper on the Urban Environment [1], by the ideas of Krier and the Compact City policy in Holland. The wish of returning to the classical European city.

2 The claims and counter claims

The ideas in the Danish policy were furthermore in line with research. Research by Newman and Kenworthy and Naess demonstrated a close correlation between high urban density and low energy use for transport [1, 2, 3], and between high urban density or compact urban form and low energy consumption for space heating. A more compact urban form support efficient district heating systems [4] and multi-storey housing has lower energy consumption pr. square meter for heating than detached single family housing [5]. On the other hand, there were critical voices such as Gordon and Richardson [6] pointing out that variation in petrol consumption the cities studied by Newman and Kenworthy, is due mainly to differences in lifestyle and travel behaviour. Others mentioned that more compact city development causes increased traffic congestion, which leads to greater air pollution in urban areas.

Researchers have also debated whether a more compact city will create a more liveable urban environment and improve local services. But this claim have been met by a counterclaim saying that higher densities lead to more crime, noise and pollution, and that the compact city is not socially acceptable due to perceptions of overcrowding and loss of privacy [7]. Breheny [8, 16] has stressed the fact that the dominating choice of life-style is suburban. Furthermore, Naess has conducted a survey that supports the resistance towards a densification of housing areas and a desire towards new residential developments in country-like surroundings [9]. Hence, there could be a conflict between densifying the urban fabric and the preferences of its inhabitants. Others pointed at the possible wider social impacts. Smyth [10] has argued that a compact city policy possibly will have the same social impacts as urban renewal projects: The disadvantaged will suffer more from the resulting high land prices and thus social segregation will continue.

A final argument that has gained support in recent years is the "loss of land" argument. Continued urban sprawl will lead to a continuing loss of land - often valuable agricultural land. This speaks in favour of a concentration of urban development within the current urban fabric. The Council for Protection of Rural

England has been one of the major proponents of this position which is also supported by researchers involved with biodiversity issues. They have stressed that from a biodiversity point of view, large green areas outside the city are more valuable than many small green spots within the urban area [11]. On the other hand, green areas have been stressed as important from a recreational point of view [8, 11, 12] but also to the ecological needs of the urban area [11 and 13]. Most of this debate has occurred after compact city policies has been implemented in several European national planning guidelines. There has been a lack of empirical research assessing the actual consequences of a compact city strategy. This paper is based on a ph.d. project [17] aimed at providing this empirical knowledge.

The following case study will address some of these claims and counter claims. In the assessment of the densification process I will address the following questions:

- Does current densification support existing urban districts, creating a wider range of housing alternatives supporting social integration?
- Does densification support mixed use and the use of local services?
- Is there a conflict between densification and securing green areas?
- Does densification lead to a lower level of transport?
- Does densification imply a higher level of environmental pressure on the local environment?

Thus addressing both environmental and social issues of sustainability. In addition to this I will discuss how the local authorities have handled the planning process in order to show what their main interests and concerns have been. This explains partly the impact of urban densification.

3 Densification in Copenhagen, the case of Oesterbro

During the 90ies Copenhagen has seen a higher level of building activity. Studying inner city regeneration is relevant in relation to the compact city discussion, because a large part of current urban development is taking place in these central districts.

The Copenhagen district of Oesterbro has in the past decade experienced the highest level of building activity of all Copenhagen districts. The district, located next to the old central district of Copenhagen, was built during the period of 1880 - 1920. It contains a housing district of 5-6 storey closed blocks, interrupted by small spots of remaining detached houses or villas; a large park and the port area where a substantial redevelopment is currently taking place.

In the district of Oesterbro, 76.000 square meters of housing and 150.000 square meters of offices and retailing have been built during the 1990s. There has been an increase in jobs and a minor increase in local employment. Since 1994 more than 2000 additional jobs (equivalent to an 8% increase) have been created in Oesterbro. The increase has especially been in relation to the service sector and finance. Residents in Oesterbro in general are mainly employed in the health sector, services and education. Still, only about 15% of the residents are locally

520 *The Sustainable City II*

employed. The increase in local employment is mainly in relation to the finance sector. Thus there is an increase in the number of commuters out of the district, and especially out of the municipality.

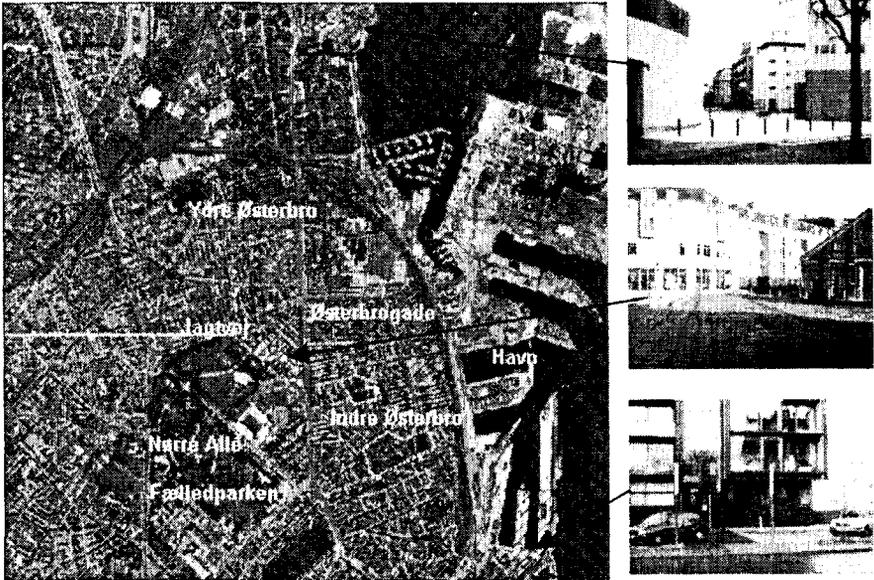


Figure 1: The areas being redeveloped are former harbour areas, derelict sites, old military barracks, but also smaller sites in the part of the urban districts with lower densities. The photos on the right side are the 3 new redevelopments in focus in the following analysis. All of them consist of housing and services.

The high level of building activities has led to an increase in population density in the district by 5.9% which is higher than the increase for the municipality of Copenhagen generally. The general plot ratio of the urban district has increased from 300 to 330 %, during the 90ies.

The regeneration and densification of the district has in physical terms repeated the urban pattern of the district. The dense centre has become even more dense. The harbour area is being redeveloped with a more open urban structure incorporating the financial sector which both in physical and employment terms has taken over the place of industry and harbour activities. The few housing developments here are expensive and exclusive as along the northern coastline of Copenhagen. The railway line, which is substantial barrier between the housing district and the harbour areas has become an even larger barrier because of the four lane road constructed along this, in order to improve access to the new harbour developments. The metro stations are currently only accessible from the district, and have not been opened towards the harbour areas.

This has not been improved during the regeneration, although this would improve the access from the district to the harbour and improve the new harbour developments accessibility to the district and to public transport.

The paper will focus on three redevelopments in the district (figure 1), which are good examples of current redevelopment in Copenhagen and other western European cities. The redevelopments are located on the harbour front and on former industrial sites. All redevelopments include new housing, offices, and in two of the projects, new retail developments. The plot ratio are 150% in all developments.

3.1 Sustainable housing?

The existing housing in Oesterbro consists of a larger proportion of large flats than other Copenhagen districts. This trend continues in the new housing developments, which are mainly flats with several rooms and many of them with a quite high price level. Thus many of the developments are for high-income groups, although there is a need for housing for elderly, students, kindergartens, etc. according to the municipal plan for Copenhagen. This development in the housing sector is in line with the municipality of Copenhagen's housing policy of attracting families and high income groups. In addition to this policy, the Municipality of Copenhagen has stopped building social housing.

The residents moving in to the new housing developments are mainly:

- high-income elderly couples or younger couples without children or
- middle-income couples with children and single parents.

High-income and no kids households prefer the harbour developments. In general the residents of Oesterbro have a higher income level than other Copenhagen districts and this trend has increased during the densification process of the 90ies.

One could question whether the current trend results in social diversity. Rather the development support continuing social segregation in the city. Smyth [10] has pointed out that the compact city policy and urban gentrification in inner city districts may lead to social exclusion. Higher price levels in inner districts, a result of urban renewal and gentrification, have led to displacement of the disadvantaged out of the core and inner districts into the transitional zone. Smyth underline the evidence of this trend, which has been observable since the mid 1980s, when gentrification of inner city districts began to accelerate.

On the other hand, the dispersal of the urban area that we have witnessed in the past decades has increased gender, age and socio-economic differences. Nyström [14] has concluded that dispersed urban development is not socially sustainable. The problem of current urban development rather, is that it continues to support trends in the socio-geographical pattern, but with the opposite geographical direction. In some areas this may lead to higher social diversity, but in others it will not.

3.2 Urban greening?

There is a conflict between densification and the need for local recreational areas, but at the same time the densification process has led to more accessible green space in the district. This is due to the fact that derelict sites, defence areas, etc. were not either green or accessible before. And during the current redevelopment they are becoming both more green and accessible.

But this still green areas and recreational interest does not have a high priority among developers and local authorities. A case showing the conflict very clearly is the redevelopment on the former industrial site located next to one of the metro stations. Although the area has never been accessible to the public, the redevelopment project has encountered resistance in the local district. Local recreational interests in the district have fought for a new park, the area being poorly served with local recreational facilities. The distance to the nearest park is more than 1 km. Local residents overturned the fence running along the development area. Subsequently, they bought plants and trees for the area. Development of this site is an example of the conflict between regional and local interests, and in the current urban development of Oesterbro, local interests lose.

3.3 The use of the urban district and everyday life

Interviews have shown the differences in the way the new residents use the urban district. The high-income groups on the harbour front do not relate to the district of Oesterbro. In general they don't work, shop or have any leisure activities there. They work all over the region, they shop either down town or in the more exclusive northern part of Copenhagen. And of course they primarily drive by car to these activities (see figures in next paragraph). This is a quite different every day life than the residents in one of the other developments, which work in the district or in the centre of Copenhagen, do their shopping in the local district and use the leisure facilities near by.

These choices are related to lifestyle, distance to workplace and facilities but also urban design. Table 1 and 2 shows the differences in distance to work. In the harbour developments a larger part of the households work outside the municipality and outside the county. A larger proportion of residents on the harbour front has moved from the suburbs to the centre, than the case is in the other development. At the same time the harbour front developments are not integrated in the urban district or the urban structure and without any local services. The lack of integration with the urban districts result in not using the local services of Oesterbro.

Table 1. Households characteristics regarding distance to work

Development	Share of population working in the Municipality of Copenhagen	Share of population working in the county of Copenhagen	Share of population working outside the municipality and county
Harbour: Midtermolen	57%	32%	11%
Central Oesterbro: Oester Faelled	69%	23%	8%
Harbour/periferi: Tuborg Nord	44%	46%	10%

Table 2. Distance to facilities

Development	Shopping possibilities within 500 meters?	Recreational facilities within 500 meters?
Harbour: Midtermolen	NO	YES
Central Oesterbro: Oester Faelled	YES	YES
Harbour/periferi: Tuborg Nord	YES	NO

3.4 The need for transport

The differences in every day life in the different new developments are reflected in the volume of transport in these areas. Not all are comparable to the Copenhagen average. There are substantial differences in the volume of transport between residents in the new housing developments (Table 3). The new developments in the harbour areas have a higher volume of transport and a higher use of car as mode of transport for work trips but also for shopping trips. The central located new residents have a daily volume of transport pr. person for shopping purposes on 1,4 km, where as the same figure for the two harbour developments are 3,4 km and 3,9 km. The share done by car is only 21 % for the central located dwellings but 69% and 76% for the new harbour developments.

Table 3. Volume of transport in 3 new developments in central Copenhagen.

Development	Km/capita/day	Share done by car	Carownership
Harbour: Midtermolen	32,2	67%	48% no car 36% one car 16% two cars
Central Oesterbro: Oester Faelled	19,8	33%	81% no car 19% one car
Harbour/periferi: Tuborg Nord	32,2	70%	43% no car 51% one car 6% two cars
Copenhagen in general:	25,3	35,7%	

Table 4. Distance to public transport and parking facilities.

Development	High class public transport within 500 meters?	Parking possibilities
Harbour: Midtermolen	NO	Very good;
Central Oesterbro: Oester Faelled	YES	Fewer:
Harbour/periferi: Nord	YES	Very good;

These differences are not only related to the income level of the households, but also to the differences in urban design in the developments, parking possibilities and distance to high class public transport and facilities. The design of the harbour developments are planned for the use of car, few pavements and bicycle lanes, very good parking possibilities and access by car, poor access by public transport and no local services. They are forced to use car although central located.

Still, although some of these new residents have a higher volume of transport than the Copenhagen average, they still have a lower or equal transport level, than residents of outskirts and suburban district of the Copenhagen region. But better results could have been achieved. Reducing cartravel takes more than a central location. It has to be coupled with a parking policy, improvement of public transport and an urban design of the public space in relation to the development (pavement, bicyclelanes, etc.).

3.5 Environmental impact on the local district

The compact city policy has a regional focus. It may reduce car travel from a regional perspective, it may reduce the biodiversity loss from a regional perspective, but it does put a higher level of environmental pressure on the local environment. In the district of Oesterbro the higher level of transport on several of the main roads has consequences for local air pollution, noise levels, and the physical and visual barriers that substantial traffic create. There has been an increase in traffic accidents during the period 1994 -1996 when the major redevelopment started. These accidents have taken place on the roads where there has been an increase in traffic, but also on the main shopping streets in general.

4 Sustainability or business as usual?

Overall, the municipality has not seen densification in an environmental or social context. Thus some of the possible benefits of such a process is not achieved. This case study of the current densification of a Copenhagen district, indicates several problems in relation to sustainability goals, when applying a compact city policy. An essential cause of these problems may be found in the way the local

authorities have handled the development projects, and less so in the compact city policy itself.

In studying the current urban restructuring of Oesterbro, interviews with local authorities have revealed the pressure placed on them by developers when negotiating local plans. The result has been that the developer's interests have been favoured and the public interests suppressed. We have seen this in connection with public areas, green areas and cultural heritage sites. Local residents have called attention to this fact in relation to the planning of these projects. But this has not altered the final result.

The way the local authorities have build with higher densities until now mostly reflects their narrow economic interests in attracting new residents and office locations in Copenhagen. Copenhagen has had a long-standing interest in building as many housing developments as possible within its municipal boundaries. This fact has become more significant after the resignation of the 1960s, 1970s and 1980s, when the municipality experienced a considerable decline in population and a corresponding loss in tax revenue. The current increase in population should be seen in light of this decrease during the past decades. In Greater Copenhagen, there is an ongoing competition between the municipalities to attract taxpayers and commercial activities. The current concentration of activities goes hand in hand with interests in densification of the urban fabric due to environmental concerns, but we must question whether these concerns will be fulfilled if current developments continue.

5 Conclusions

Several lessons can be learned from this case study of current densification of a Copenhagen district. The conflict between regional and local environmental interests has been discussed in relation to the compact city, but competition, organisation, and the conflicts of implementing this strategy have rarely been discussed thoroughly.

This case study has shown that the critique of the compact city concept has had some legitimacy. The local authorities do not work with the compact city strategy as their overall planning strategy and does not relate this to a strategy for sustainable urban development.

Furthermore, the case study has shown the conflicts between urban densification as it is now occurring, local environmental and social concerns and the interests of developers. Anderson (1998) has described this phenomenon as "the illusion of urban renewal as an integration in which the basic attribute of the urban space is a richness and variety of relationships between people from different social and consumption groups falls down because of solutions dictated by the power of capital". If the compact city is to provide a more sustainable urban development, local and regional authorities must balance the strong financial interests in current urban development. And as densification is now occurring, this is not the case. In relation to densification in England, Breheny (1992) has pointed out that "the town-cramming that we have witnessed is the

result of a piecemeal, largely unplanned activity, carried out without regard for environmental consequences.” We can conclude that if urban densification is to bring more sustainable development to our cities, a more thoroughly planned densification process is an urgent necessity.

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