New Trends and theories for Secured Cities:

Towards a resilient city: Urban planning in Oslo

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ABSTRACT:

Urban security covers a high range of topics as climate challenges, urban violence and environmental concerns. This paper addresses urban planning and compact city development as tools to reach resilient cities. Oslo, the Norwegian capital is used as an example. Oslo is regarded as a green city with a well developed green infrastructure, urban forests and a waterfront. Oslo is also among the most rapid growing cities in Europe which make a high pressure on urban land. The paper highlights planning for urban green infrastructure and waterfront transformation.

The conclusion is that the current urban development in Oslo is a compact city development where urban planning, planning ideals and transformation projects seem to have reduced urban sprawl. Important explanations seem to be that compact city planning ideals conducted well with both developer’s preferences and environmental policy. Compact city development will, however, not necessary be a development towards a resilient city. Challenges in the current urban development in Oslo are related important aspects as loss of urban green infrastructure which reduces the urban greening, democracy deficit with lack of transparent urban processes and undeveloped urban land not being transformed into higher densities.

URBAN SECURITY AND RESILIENCE

Contemporary urbanization is a global process. It is manifested through densification of people in urban regions and urban land growth. At the same time, the cities are facing an increasing uncertainty from natural disasters to crime and terrorism (Coaffee & O'Hare 2008). From a resilience perspective, governance can be a collective action among stakeholders to either sustain or improve a certain management regime, or to trigger a transition of the system into a more preferable regime; addressing adaptive capacity and transformative capacity to reach urban sustainability (Folke et al. 2005).
The definition of resilience is to sustain an urban governance to build transformative capacity which face both uncertainty and change (Berkes et al. 2003). The concept urban resilience is an analytic framework to analyze urban challenges and planning response. Oslo, the Norwegian capital is used as a practical example to explore how planning can be a response on environmental challenges in order to make a resilient city.

Urban planning, space and urban security are a well established theoretical tradition. Jane Jacobs was probably the first who introduced a relationship between urban structures and security in her book “The Death and Life of Great American Cities” (1961). She addresses a successful urban development to give priority for pedestrian so they feel safe in any street. This can be achieved by designing the streets in such a way that enhances both the urban environment and human presence. Road planning and design manuals worldwide are for example built on zoning principles, environment impacts, accessibility and universal design.

Fig. 1: Example on zoned urban transport network (Norwegian Road Authority 2008; 23-25)

The relation between space and security includes also crime prevention. In 1972, Oscar Newman published his book “Defensible Space” where he outlined spatial principles required to achieve what he termed a ‘defensible space’. He was inspired by the criminologist C. Ray (1971) who addressed Crime Prevention Through Environmental Design (CPTED). CPTED is an interdisciplinary approach which intends to influence offender decisions that precede criminal acts through design. However, research shows that the decision to offend or not is more influenced by risk of being caught than spatial conditions (Crowe 2000). The crime prevention principles consist of territoriality, surveillance, access control, image/maintenance, activity support and target hardening (Moffat 1983). One of them is that urban form can reinforce social control. The current principles are therefore a mix of spatial and social principles.
There is an increasing focus on urban resilience as important for urban security. Urban resilience is the capability to prepare for, respond to, and recover from urban threats. A resilience strategy intends to reduce damage, secure public safety and health, and secure the economy a given urban area. One important theme in urban resilience is handling the environmental challenges through urban planning.

Resilience is especially important in urban areas. Over the past century there has been a considerable increase in urbanization and urban sprawl. Half of the world’s population lives in cities, a figure that is set to rise to 70% by 2050 with a current urban growth rate in 2% (United Nations 2012). The rapid urbanization treats urban security as suddenly disasters as flood, heat and food shortage. It also treats urban security through slow changes which treats the environment and the society. Examples are on such changes area urban sprawl, lack of urban infrastructure, climate effects and loss of biodiversity. Urban areas are especially vulnerable to both the acute disasters and the slow effects of development. This makes urban planning as a collective response on urban threats to an important way to improve urban resilience. The academic focus is in particular on resilience related to climate change, environmental treats, natural disasters and terrorism (Coaffe 2008, Pickett et al. 2004).

Recent urban resilience research gives particular focus on potential effects from climate changes which affect the environment, society, economy and humans. Waves and droughts harm humans and society, and can lead to forest fires, air pollution, reduced biodiversity and agricultural losses. The Great Russian Heat Wave with fires and smog in 2010 caused nearly 5 000 more deaths in Moscow than a normal summer\(^1\). Research indicates that by 2040 over 50% of summers will be warmer than 2003 (Jones et al. 2008). Heat waves and droughts are often concentrated in urban areas and such areas create the “heat island” effect where inner-city temperatures are comparatively higher than in the rural areas. Adaptive strategies are urban greening which increases the amount of natural cover. Plants absorb solar energy and trees gives shades. Strategies includes also measures for vulnerable as spatial arrangements as cool places as well as information and training.

Urban resilience gives also focus on flooding, either from weather events, rising sea levels or infrastructure failures. Cities are increasingly vulnerable for flooding due to the large quantity of impermeable surfaces as paved and concrete surfaces. Flooding can also lead to
contamination of drinking water. The flooding of New Orleans (USA) in 2005 was an effect from the hurricane Katrina due to levee breaches. Between 80 and 90 percent of the residents of the city were evacuated. Adapting flooding strategies includes urban greening as establishing porous surfaces, preserve green areas, and develop vegetation to absorb water and green roofs. Other strategies are flood-water control is levees, physical barriers, planning restrictions in potential flood areas, emergency plans and information.

ADAPTIVE STRATEGIES

Urban resilience is a complex concept which includes several challenges which could be addressed through a high number of strategies. Compact city, integrated urban and transport planning and urban green infrastructure are three adaptive strategies to strengthen urban resilience. These strategies fall under the urban sustainable development paradigm, but they have distinct differences in terms of focus, professionalism and solutions. Both strategies use urban planning as an important tool.

The *compact city* is a city of with an urban form with short distances, high residential density and mixed land uses. The compact city in a sustainable development perspective can be in particular be traced back to the report of the World Commission on environment and development “Our common future” from 1987 (World Commission on environment and development 1987). The compact city is seen as more energy efficient and less polluting because compact city dwellers can live closer to shops and works. The concept is also related as opposite to urban sprawl which is regarded as an ignored threat in Europe (European Environmental Agency 2006). A compact city in contrast to urban sprawl, consume less green areas and farmland. The compact city is criticized to be an inefficient strategy to reach a sustainable city due to slow changes in urban form and treats for loss of biodiversity (Neuman 2005, Hall 2001).

![Fig. 3: Urban sprawl and compact city](image)

In Norway, the research project “Nature and environmental friendly urban development” was set up, inspired by this report. The aim was to develop criteria for sustainable urban development, and to assess which patterns of urban development would be sustainable (Næss 1992). The core scenario involved a compact city model, a restructured transport system.
towards public transport and protection of green infrastructure, urban green areas and farmland. This urban ideal was in line with international trends (Breheny 1992, Jencks et al. 1996), and is today the main urban planning strategy in Europe (Commission of the European Communities 1990).

*Urban green infrastructure* is one key concept to address urban resilience. The strategy emphasis the "life support" functions for the city to provide natural ecosystems and urban sustainability. The strategy includes important aspects as recreation, biodiversity and water management. The term "green infrastructure" is sometimes expanded to "multifunctional" green infrastructure. Multifunctionality in this context refers to the integration and interaction of different functions or activities on the same piece of land. This is a key to the efficient and sustainable use of land, especially in a compact city where pressures on land are particularly acute; there is a lack of open space and a large percents of hard cover surfaces. An example might be an urban edge river floodplain which provides a repository for flood waters, acts as a nature reserve, provides a recreational green space provides cooler areas and could also be productively farmed as urban small scale farming.

![Fig. 4: Urban farming, and green infrastructure in the city and the urban forest in Oslo. Source: own photos.](image)

In the early 1980s Peter Newman and Jeff Kenworthy started to study the *interaction between urban form and transport* using world cities as cases (Newman & Kenworthy 1989). The study recognized empirical evidence for a correlation between urban density and transport. High density in cities in e.g. Europe and Asia had lower transport travels than cities with low density as cities in particular Australia and USA. Since then, the integration of land use and transport has gained increasing international attention due to climate gas emission from transport.

The term “automobile dependence” described the outcome of urban form, modes of travels, vehicles and parking space on transport. Urban planning for a compact city became a tool to lower the urban transport. Figure 5 illustrates the complex cycle of automobile dependency which include much more than urban form. Reduction of climate gas emission depends on a high number of processes. This makes land use- and transport planning to a challenging task due to complex processes, conflicting goals, transport models which generate growth and driving forces (Tennoy 2012).
GREEN OSLO
Oslo, the capital in Norway, is among the fastest growing cities in Europe. The city is, however, a small city in terms of inhabitants. It has today around 600 000 inhabitants, calculated to be around 2 million people in 2060. The potential for urban sprawl within the narrow administrative boarders are limited. Oslo built up area is therefore sandwiched between the fjord, neighbour municipalities and the protected urban forests.

The Greater Oslo urban area covers eleven municipalities with around 900 000 inhabitants. Greater Oslo has high potential for urban sprawl, and it is calculated to be 2,6 million inhabitants in this area in 2060. Oslo urban area has a much higher population density compared with the other municipalities (Figure 7).

![Fig. 5: Cycles of automobile dependency. Sources: www.vtpi.org](image)

![Fig. 7: No of inhabitants per km2 in the municipalities in Greater Oslo. Source: Oslo Municipality 2008.](image)
Oslo is a green city and the city planning addresses green urban strategies as compact city, green infrastructure and integrates land use and transport (Luccarelli & Roe 2012). Around two-thirds of Oslo’s 454 km² is made up of green areas, most of this are the urban forests. Green infrastructure in the build up area and urban forests has been an important discourse in planning since the first modern city plan from 1929 (Jorgensen & Thoren 2012). Green values are still given priority in the recent Oslo Municipal Plan from 2008. This plan states that: “Oslo Municipality manages natural resources in the city in a sustainable manner, cf Ecological Programme 2002-2014” (Oslo Municipality 2008:14). The aim is that Oslo will be one of the world's most environmentally friendly cities. Fjord and the urban forest give Oslo a blue-green character to be preserved and strengthened. It is also stated in the plan that loss of urban green structure should be protected or replaced with new green areas.

The first Green plan for Oslo was adopted in 1993. It is currently under revision and aims to protect the green infrastructure. The green infrastructure includes parks, walking paths, waterways, green corridors, less-well maintained green areas and other green areas in Oslo. Urban densification is regarded as a threat for in particular the green infrastructure due to patchwork urban development trough single development projects (Falleth & Saglie 2012). Parks, trails and the urban forests seem to be well protected. This is less true for the rest of the green infrastructure, which is sometimes seen as “just” fallow land. Oslo municipality also conclude that the urban planning is not been a sufficient tool against the loss of green areas (Oslo Municipality 2009). The compact city policy seems however to have worked out in Oslo. The trend since the beginning of the 1990s has been for higher population densities within major urban areas and less urban sprawl (Næss et al 2011).
Oslo aims to build a more compact city has given high focus on urban transformation on prior industrial, small industrial and harbor areas. Transformation of Oslo Waterfront is one important development planning project which started in the 1980s. The Fjord City Plan from 2008 builds aims to transform former industrial, transport and harbor areas along the waterfront in Oslo City into attractive urban areas. The Fjord Plan is based on densification with high rise buildings, but intends also to create open public spaces as parks, promenades along the waterfront and open connections between the city and the waterfront. The plan is implemented trough development projects as indicated in figure 10 where the yellow areas in the plan are under planning while the brown areas are completed or not under planning. See figure 11 for illustration from some of the transformation project development.
One example on a transformation project within the Fjord Plan is the Barcode Project. This project takes place in former dock and industrial land in central Oslo. It is located close to the iconic Opera House. The plan was adopted by the City Council in 2003 after an international competition which was won by Dark Architects (Oslo), a-lab, and MVRDV (Rotterdam). It consists of a row of new multi-purpose high-rise buildings to be completed in 2014. There has
been intense public debate about the project’s height, design and climate effects. The general plan specified five high-rise building rising up to 100 m above sea level and having approximately 24 floors. The other towers were specified to be lower in height. The buildings were described as a geometric system of volumes based on penetrating strips of empty space. The project is under implementation in 2013.

Another example on a transformation of Oslo Waterfront is development of Tjuvholmen (Thief Peninsula) which is almost to be completed in 2013. This area is also a former industrial and harbour area where the developers (Selvaag Group and Aspelin Ramm) has prioritised architecture. The peninsula consists today of residential areas, open space, museums, hotels and restaurants. This area includes important architectural buildings as Astrup Fearnly Museum of Modern Art (Renzo Piano) and The Thief hotel (Mellbye Architects).

Development of the Oslo Waterfront also included a major transport plan in order to give space for the planned urban transformation. This plan is also almost implemented. A crucial project for implementation of the Oslo Fjord Plan is to remove European Route E 18 in Oslo city which the most frequented transport vein in Norway. This road was the main barrier between the city and the fjord. The E18 is today relocated from the surface to the Bjørvika tunnel. Bjørvika tunnel is the last part of an advanced highway tunnel system in Oslo which binds together the west with the east. The Bjørvika tunnel opened in 2010 and is at 1 100 meters. Including transport routes, by-and-ramps and the like, the total path length of Oslo tunnel systems is 8 000 meters.

![Fig. 11: The tunnel system in Oslo city. Source: www.ssv.no](https://www.ssv.no)

TOWARDS A RESILIENT OSLO

Urban planning is one tool for making cities resilient. The compact city vision is a dominant ideal and a political strategy for urban development in Europe as well as in Norway. There is concurrence between urban resilience and the compact city vision. Important joint issues are making green cities trough less urban sprawl and development of a green infrastructure and
reduction of climate emissions through a less transport dependent urban structure. A green city
addresses several environmental objectives, but also intends to intensify and improve urban
life (Luccarelli & Roe 2012).

This paper has given a presentation of important transformation project and urban plans in
Oslo. This planning has contributed to a more compact city and less urban sprawl (Næss et al
2011). In this perspective urban planning has made Oslo into a more resilient city. Research
indicates also loss of green areas in the build up area (Falleth & Saglie 2012, Jørgensen &
Thoren 2012, Oslo Municipality 2008). Compact city ideals could therefore also reduce the
urban resilience due to loss of green infrastructure to absorb water, protect biodiversity and
make a healthy micro climate (not to hot, to little sun and winds tunnels).

The public debate in Oslo has also questioned to what extend are these modern buildings
covered with glass are sustainable in a country with very cold winters. The public debate has
also been about high rise buildings in a northern country which cast long shadows making
cold microclimate in the city. The development projects are also criticised for democracy
deficit due to prominent role for developers, lack of transparent processes and lack of meta-
governance through urban planning (Falleth et al. 2010, Fimreite & Medalen 2005). However,
my conclusion is that urban planning has made Oslo into a more resilient city related to a
more compact city, less urban sprawl and green planning.

CONCLUDING REMARKS

I would like end this paper addressing some future challenges related to urban development in
Oslo. The ideal of the compact city runs parallel with a strong market orientation in urban
development (Børrud 2005, Rosnes 2005, Nordahl 2006). Norway has gone one step further
than many other countries leaving most responsibility for development planning to
developers. Implementation of development plans – in the understanding of producing urban
space - is also a private matter. The local governments are dependent on the market actors to
implement their plans, urban development objectives and local development. The
understanding of stakeholders, market considerations, the interaction between private actors
and the governments and planning governance is therefore important to understand lack of
urban development in attractive urban areas.

Building permit application and development planning is closely integrated in Norwegian
urban development. They may be labelled “project plans” due to their miniature format within
the urban built up area and ”patchwork planning” (Nordahl 2006, Børrud 2005, Rosnes 2005).
This urban planning is a bottom-up activity where developers are principal actors. The
contrasting alternative would be a planning system with a top- down hierarchical system,
where local master planning is a meta-planning for lower level planning. The private planning
challenges planning as a governance system not only because the different private initiatives
need to be coordinated in comprehensive urban development but also because the private
initiated land use changes are interlinked with net return calculations and the economic
viability of the project.
The rise of a market-based planning system has only lately influenced planning research. This has given a theoretical dispute. Planning theory, at least the Northern European debate, has given strong emphasis to collaborative planning and deliberative planning processes. Bengs (2005) argues the advance of neo-liberalism has reduced planning theory to pure ideology, useless for all theoretical and practical purposes, and left the deliberative theorists as naïve mandarins of the neo-liberal state. Sager (2005) on the other hand, argues that planning theory has always reflected change in society, one example being the important switch from an instrumental perspective on planning to the current communicative planning paradigm in the late 1950s. The influence of neo-liberal values in planning practices has since then gradually been incorporated into planning theory (Mäntysalo & Saglie 2010, Fimreite & Medalen 2005).

The prominent role of the private developers in urban development is strongly linked to their role in the investment in urban developments. The public authorities depend on private investment to govern urban development, so the planning has to work with the market. The question is how market and planning actors can cooperate in order to secure urban resilience. So far, the urban areas which have been transferred have been prior industrial and harbour areas which appear to have been “easy” to develop: the land was accessible, had low “starting cost”, had one or few landowners, was developed through public-private partnership, etc. Left now are the more complex un(under)developed urban fields. Today the land possible for development in the city is more fragmented and complex with a high number of stakeholders. It seems that the planning authorities need to facilitate (re)development through new use of their planning tools, to reach a sustainable urban development if the planning still will develop a compact city. If not, there will be increased urban sprawl in Greater Oslo. To make urban sprawl into a resilient city need new planning ideals.

References:


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1 [https://www2.ucar.edu/atmosnews/opinion/2346/how-unusual-moscows-heat](https://www2.ucar.edu/atmosnews/opinion/2346/how-unusual-moscows-heat) Downloaded 3rd January 2013.


3 Compact city is also seen as a strategy to improve urban quality trough densification of activities and to improve public health trough development pathways a
4 http://www.regjeringen.no/nb/sub/framtidensbyer/byer/oslo.html?id=548198


6 The picture are downloaded from www.google.com