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TØI report 1024/2009

Institute of Transport Economics
Norwegian Centre for Transport Research

# The challenge of sustainable mobility in urban planning and development in Oslo Metropolitan Area

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**Summary:**

The theme of this report is how the challenge of sustainable mobility has been dealt with in urban planning and urban development in Oslo Metropolitan Area since the 1990s. The period has been characterized by concentrated and compact urban development, especially within the municipality of Oslo. This has contributed to reduce growth in car traffic. Analyses of selected land use and transport plans and policy documents, professional journal articles and interviews with key actors show that there has been a high degree of consensus about this spatial development strategy. Considerable investments have been made in public transport as well as road development; the former based on broad consensus. Road capacity increases have been contested among professionals but widely supported by politicians.


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**Sammendrag:**

Temaet for denne rapporten er hvordan utfordringen om bærekraftig mobilitet er blitt håndtert i byplanleggingen og byutviklingen i Osloregionen siden 1990-årene. Perioden har vært preget av en konsentrert og kompakt byutvikling, særlig i Oslo kommune. Dette har bidratt til å redusere veksten i biltrafikken. Analyser av utvalgte areal- og transportplaner, strategidokumenter, fagtidsskriftartikler og intervju med sentrale aktører viser at det har vært høy grad av enighet om denne byutviklingsstrategien. Det er gjort betydelige investeringer både i kollektiv transport og i vegbygging. Det har vært bred enighet om kollektivsatsingen. Utvidelse av vegkapasiteten har vært omstridt blant fagfolk, men har hatt bred politisk oppbakking.


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# Preface

This report presents the results of a study of the ways planners and decision-makers in Oslo Metropolitan Area have understood, interpreted, formulated policies and finally acted in relation to transport and land use in a sustainability context during the period since the 1990s. The Oslo case is part of a comparative study also including the metropolitan areas of Copenhagen in Denmark and Hangzhou in China. The project was funded by Volvo Research and Educational Foundation and was carried out during the period from the winter of 2007 to the summer of 2009.

The report has been written by Senior Researcher, Professor, Dr. Ing. Petter Næss, M. Sc. in Political Science and Administration Teresa Næss and Head of Department, Professor, Dr. Ing. Arvid Strand, with the former as main responsible. Strand has been responsible for the quality assurance of the publication. Teresa Næss has written the bulk of chapter 5 and Petter Næss has written the remaining parts of the report.

The analysis of actual spatial development was carried out by Petter Næss, who also carried out analyses of relevant plans and policy documents. Arvid Strand and Petter Næss together interviewed relevant actors in planning and policy-making and carried out initial analyses of relevant journal articles. Synthesizing analysis of the discourse in journals was carried out by Petter Næss, who also made the initial interpretation of individual interviews. Teresa Næss carried out interview transcripts and made the synthesizing analysis of the interviews.

Oslo, July 2009
Institute of Transport Economics

*Sønneve Ølnes*
Deputy Managing Director

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Head of Department

# Contents

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**Summary:**

# The challenge of sustainable mobility in urban planning and development in Oslo Metropolitan Area

This report presents the results of a study of the ways planners and decision-makers in Oslo Metropolitan Area have understood, interpreted, formulated policies and finally acted in relation to transport and land use in a sustainability context during the period since the 1990s. The Oslo case is part of a comparative study also including the metropolitan areas of Copenhagen in Denmark and Hangzhou in China.

Oslo has broken a long-lasting trend of spatial expansion and has since the mid 1980s followed a clear urban containment policy. Within the continuous urban area of Greater Oslo, the population density increased from 28.7 to 30.7 persons per hectare between 2000 and 2009. Within the municipality of Oslo, the density increase was substantial. Here, the urban population density increased from 37.9 persons per hectare in 2000 to 42.3 persons per hectare in 2009, i.e. by more than 11 %. The increase in population density has been going on since the late 1980s. The concentrated urban development in Oslo Metropolitan Area has contributed to reduce growth in car traffic and has clearly contributed to more sustainable mobility than what would have been the case with a more sprawling pattern of development.

Why has Oslo pursued such a strong densification policy, contrary to allegedly irresistible decentralizing forces? In order to throw light on possible explanatory factors we have investigated selected plans and policy documents, interviewed key planners, policy-makers and stakeholders, and carried out qualitative content analyses of articles in the professional journal *Plan*.

A strong focus on coordinated land use and transport planning in order to reduce energy use and emissions from transport is an important part of the explanation of Oslo's farewell to urban sprawl. In addition, social and cultural conditions necessary for implementing such a strategy have to a high extent been present.

During the whole period since the 1990s, there has been a high degree of professional and political consensus about urban densification as an overall strategy for urban development. Within the Norwegian profession of spatial planners, the compact city has obtained hegemonic status as a model for sustainable urban development. There has also been a considerable market demand for more intensive land use within existing urban areas, especially in the central parts of the region. Market agents have sometimes also pushed for greenfield development at locations poorly served by public transport in the outer parts of the region, but the amount of such development has been moderate. Although competition for inward investment makes up an incentive for outer-area municipalities to accept such location preferences, national and regional land use instruments have been able to limit the establishment of new car-dependent residential and workplace areas. In particular, the greenbelt policy for protecting the forest areas surrounding Oslo (the Marka border) and the National Policy Provisions for Coordinated Land Use and Transport Planning have been important. There is still a widespread

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opinion among planners and policy-makers that the regional coordination of spatial development in the Oslo region should be improved.

Whereas land use development has to a high extent been in line with principles of sustainable urban development, the development of transport infrastructure has been more ambiguous, judged against sustainability goals. Along with important improvements in the public transport system (a new metro ring, new streetcar lines and bus lanes, and more frequent departures for streetcar and metro trains) there has also been considerable expansion of the road capacity. Seen from the perspective of sustainability, this combined, and quite costly, strategy has been similar to stepping on the accelerator and the brake at the same time. The general level of mobility has been enhanced, but the shares of car drivers and travelers by other modes have remained more or less the same.

Public transport improvement has been backed by broad political consensus. Road capacity increases have been contested among professionals but widely supported by politicians, apart from those on the left wing. In particular, there has been skepticism against urban highway development among land use planners and environmental organizations. Transport authorities and planners involved in transport infrastructure development in the Oslo region have generally considered road development as a measure to combat congestion; the transport planners have, however, at the same time often argued that better road must be combined with road pricing in order to avoid traffic increase leading to new congestion. During most of the investigated period, road pricing was not on the political agenda, but the latest transport policy deal (Oslo Package 3) opens for higher tolls on urban motoring.

The Oslo region has experienced strong economic growth (for a European city) as well as population growth since the 1990s. Within the fields affected by land use and transport planning, this growth has taken place with relatively moderate impacts on nature and the environment, compared to a sprawling and car-based development. Yet, the decoupling between growth and negative environmental impacts is relative, not absolute. The city is still moving away from important goals of sustainable mobility, albeit at a considerably lower pace than earlier.

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**Sammendrag:**

# Utfordringen om bærekraftig mobilitet i byplanlegging og byutvikling i Osloregionen

Denne rapporten presenterer resultatene fra en undersøkelse av hvordan planleggere og beslutningstakere i Stor-Oslo har oppfattet, fortolket og formulert byplanstrategier for bærekraftig mobilitet, og hvordan hensynet til bærekraftig mobilitet har nedfelt seg i den faktiske arealbruks- og transportinfrastruktur-utviklingen. Oslo-casen er en del av en komparativ undersøkelse som også omfatter Københavnregionen i Danmark og Hangzhou Metropolitan Area i Kina.

Oslo har brutt en langvarig trend med utadrettet byvekst og har siden midten av 1980-årene fulgt en klar fortettingsstrategi. Innenfor Oslos sammenhengende byområde økte befolkningstettheten fra 28,7 til 30,7 personer per hektar mellom 2000 og 2009. Innenfor Oslo kommune var økningen i tetthet sterk. Her steg befolkningstettheten fra 37,9 personer per hektar i 2000 til 42,3 personer per hektar i 2009, dvs. med mer enn 11 %. Befolkningstettheten har steget jevnt helt siden slutten av 1980-årene. Den konsentrerte byutviklingen i Osloregionen har redusert veksten i biltrafikken og har klart bidratt til en miljømessig mer bærekraftig transportutvikling enn det man ville fått med en mer spredt byutvikling.

Hvorfor har Oslo fulgt en så sterk byfortettingsstrategi, stikk i strid med drivkrefter som angivelig fører til en uimotståelig desentralisering? For å belyse mulige forklaringsfaktorer, har vi analysert utvalgte planer og strategidokumenter, intervjuet sentrale planleggere, politikkutformere og interessegruppe-representanter, samt utført kvalitative innholdsanalyser av artikler i fagbladet *Plan*.

En sterk oppmerksomhet omkring samordnet areal- og transportplanlegging som virkemiddel for å redusere energibruk og utslipp fra transport er en viktig del av forklaringen på at Oslo har lagt den utadrettede byveksten bak seg. I tillegg har viktige sosiale og kulturelle forutsetninger for å gjennomføre en tett byutvikling vært til stede.

Gjennom hele perioden siden 1990-årene har det vært en høy grad av faglig og politisk enighet om fortetting som hovedstrategi for byutviklingen. I den norske diskursen blant byplanleggere har kompaktbyen oppnådd hegemonisk status som modell for bærekraftig byutvikling. Det har også vært betydelig markedsetter-spørsel etter høyere arealutnytting innenfor eksisterende byområder, særlig i de sentrale delene av regionen. I en del tilfeller har markedsaktører presset på for byutvikling i mer perifere områder med dårlig tilgjengelighet med kollektiv-transport, men omfanget av slik utbygging har vært forholdsvis beskjedent. Selv om konkurranse om å tiltrekke investeringer og etableringer utgjør et insitament

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til å godta slike lokaliseringsønsker, har nasjonale og fylkeskommunale virkemidler i arealplanleggingen klart å begrense etableringen av nye bilbaserte bolig- og arbeidsplassområder. Miljøverndepartementets pålegg til kommunene om å innarbeide markagrensen i kommuneplanene og de rikspolitiske retningslinjene for samordnet areal- og transportplanlegging har vært særlig viktige i denne sammenhengen. Det er likevel en utbredt oppfatning blant planleggere, byråkrater og politikere om at den regionale koordineringen av byutviklingen og transporttiltakene bør forbedres.

Mens arealbruksutviklingen har vært godt i samsvar med prinsipper for bærekraftig byutvikling, har utviklingen av transportinfrastrukten vært mer tvetydig, sett i forhold til bærekraftmålene. Side om side med forbedringer av kollektivtransporten (en ny T-banering, nye trikkelinjer og bussfelter samt hyppigere trikke- og T-baneavganger) har det også skjedd omfattende utvidelser av veikapasiteten. Vurdert i et bærekraftperspektiv har denne kombinerte – og kostnadskrevende – strategien fungert som å tråkke på gasspedalen og bremsen samtidig. Investeringene og tiltakene har generelt ført til økt mobilitet, men transportmiddelfordelingen er omtrent den samme som tidligere.

Forbedringer av kollektivtransporten har hele tiden hatt bred politisk oppbakking. Veibygging har vært et stridsemne blant planleggere, men har hatt bred politisk støtte, med unntak av politikere på venstresiden. Blant arealplanleggere så vel som miljøorganisasjoner har det vært utbredt skepsis mot bygging av nye og større veier. Transportmyndigheter og planleggere som arbeider med transportinfrastrukturutviklingen i Osloregionen har som oftest sett på veibygging som et nødvendig middel til å bekjempe kødannelser. Samtidig har transportplanleggere ofte framholdt at veiforbedringer må kombineres med rushtidsavgifter for å unngå trafikkøkning og ny trengsel på veiene. Gjennom mesteparten av den undersøkte perioden var kjøreavgifter ikke på den politiske dagsordenen. Den seneste transportpolitiske avtalen for Osloregionen (Oslopakke 3) åpner imidlertid for høyere bomavgiter enn det som har vært praksis til nå.

Osloregionen har opplevd – etter europeiske forhold – sterk økonomisk vekst og befolkningsvekst siden 1990-årene. Innenfor de temaområderne som areal- og transportplanleggingen kan påvirke, har denne veksten skjedd med forholdsvis små negative virkninger på natur og miljø, sammenliknet med en spredt og bilbasert byutvikling. Den avkoplingen mellom vekst og negative miljøkonsekvenser som har skjedd, er likevel bare relativ, ikke absolutt. Oslo og Osloregionen beveger seg fortsatt i motsatt retning av viktige mål for bærekraftig mobilitet, men i et betydelig lavere tempo enn tidligere.

# 1 Background and methods

## 1.1 Introduction

The theme of this report is how the challenge of sustainable mobility has been dealt with in urban planning and urban development in Oslo Metropolitan Area during the period since the 1990s. The case study of Oslo will investigate the ways planners and decision-makers in this urban region have understood, interpreted, formulated policies and finally acted in relation to transport and land use in a sustainability context. The Oslo case is part of a comparative study also including the metropolitan areas of Copenhagen in Denmark and Hangzhou in China. The project was funded by Volvo Research and Educational Foundation and was carried out during the period from the winter of 2007 to the summer of 2009.

Since the publication of the UN report "Our Common Future" (World Commission on Environment and Development, 1987), the issue of sustainable development has been a common challenge for all nations. The concept of sustainable development, as understood by the World Commission, combines ethical norms of welfare, distribution and democracy while recognizing that nature's ability to absorb human-made encroachments and pollution is limited. This challenge is interpreted and implemented in various national contexts, including different natural topographic, socio-cultural and institutional circumstances. A comparison between nations may reveal some of the basic conditions for implementing a sustainable development. This project has focused on a particular aspect of sustainability, namely the issue of integrated land use and transport planning and development in urban areas. *Sustainable mobility* is understood as mobility in accordance with the general principles of sustainable development[1].

Oslo, the capital of Norway, had in the beginning of 2009 about 877,000 inhabitants within the continuous urban area, of which 573,000 in the municipality of Oslo and the remaining 304,000 in nine surrounding municipalities in the county of Akershus. In the beginning of 2009, the entire Oslo region had 1.2 million inhabitants, of which

[1] Based on, among others, Center for sustainable transportation (2002) and Høyer (1999), CIENS (2006) has offered the following definition of sustainable mobility which largely corresponds to our own understanding of the concept: "Sustainable mobility is mobility in accordance with the principles of sustainable development. That is, a volume of physical mobility, a modal-split and a transport technology, moving significant steps towards a situation where mobility in society:

- allows the basic mobility needs of individuals and societies to be met, offers choice among environmentally sustainable transport modes, operates efficiently and supports an economy meeting the population's essential needs (the economic dimension),
- takes care of ecosystem integrity and limits emissions and waste within the planet's ability to absorb them, minimizes consumption of non-renewable resources, limits consumption of renewable resources to the sustainable yield level, reuses and recycles its components, and minimizes the use of land and the production of noise (the environmental dimension), and
- is affordable, safe and consistent with human health as well as with equity within generations, both at a global, regional and local scale (the social dimension)."

more than 90 % living in urbanized areas. The Oslo region has had a relatively strong population growth during the latest couple of decades. For example, the continuous urban area of Oslo increased its population from 755,000 to 877,000 between 1998 and 2009. Like many modern European cities, Oslo has a trade and business structure dominated by service and knowledge industries, with a sharply declining number of jobs in manufacturing industries since the 1970s.

Figure 1.1 shows the Oslo region[2] as defined by Statistics Norway.

*Figure 1.1: The Oslo region as defined by Statistics Norway.* Dark brown: The municipality of Oslo. Red: 9 municipalities in the "inner ring" (more than approx. 40 % commuting to the municipality of Oslo). Orange: 24 municipalities in the "outer ring" (10–40 % commuting to the municipality of Oslo). Source: Ministry of Local Government and Regional Development (2007).

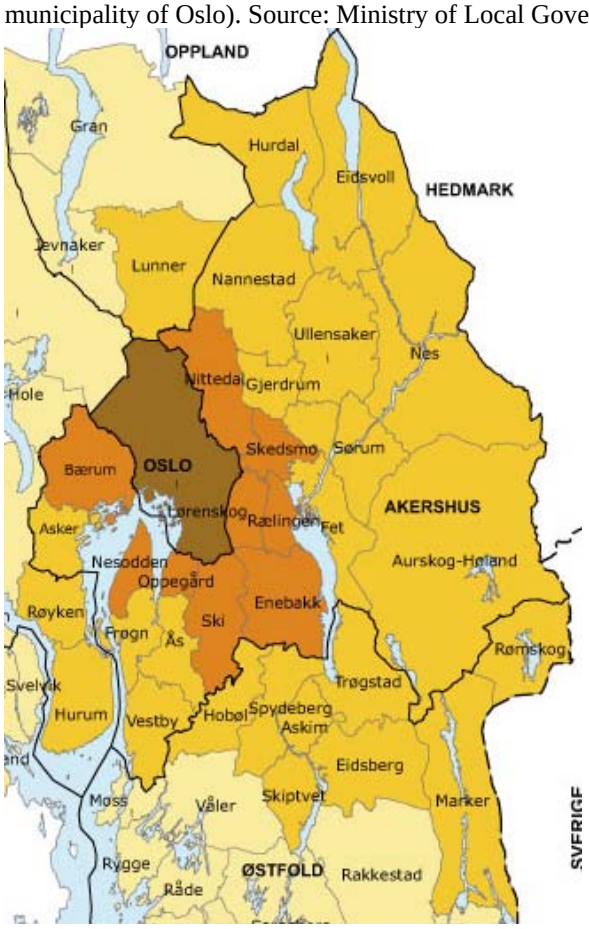
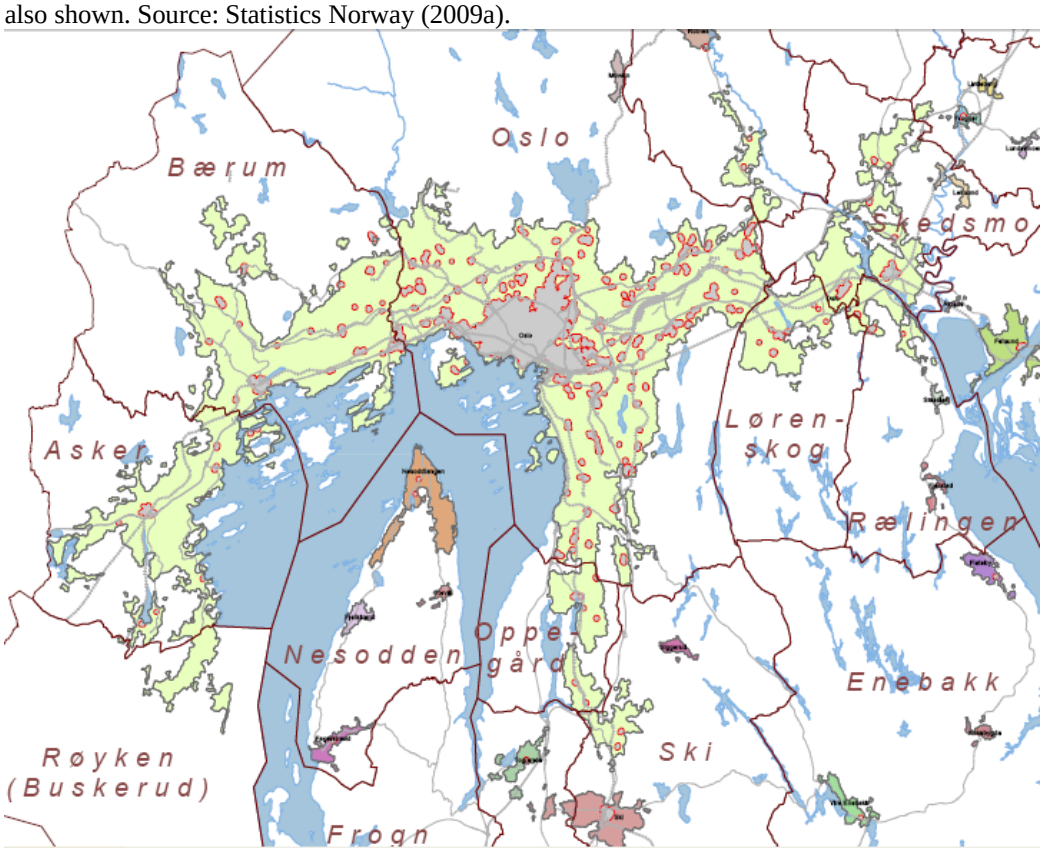



Figure 1.2 shows the urbanized areas in the central part of the Oslo region, based on urban area demarcations in 2005. The continuous urbanized area of Oslo is shown in light green, stretching from the municipalities of Asker and Røyken in the west to Skedsmo in the east and Oppegård and Ski in the south. (Other urban settlements are shown in other colors.) So-called center zones are shown in gray. Apart from the triangle-shaped large center zone in the inner city, there are several smaller center zones within the municipality of Oslo as well as in the surrounding municipalities.

[2] This refers to the statistical zone SP01 Oslo-regionen, which includes the following 34 municipalities: Oslo, Bærum, Asker, Oppegård, Lørenskog, Rælingen, Skedsmo, Ski, Ås, Nesodden, Vestby, Frogn, Nittedal, Fet, Sørum, Enebakk, Aurskog-Høland, Gjerdrum, Ullensaker, Nes, Eidsvoll, Nannestad, Hurdal, Lunner, Røyken, Hurum, Marker, Rømskog, Trøgstad, Spydeberg, Askim, Eidsberg, Skiptvet, Hobøl. (Statistics Norway, http://www.ssb.no/emner/00/02/storbymelding/)

Among the latter ones, the centers in the municipalities of Bærum (Sandvika) and Skedsmo (Lillestrøm) are the biggest ones.

*Figure 1.2: Urbanized areas in the central part of the Oslo region.* The continuous urbanized area of Oslo is shown in light green, other urban settlements in other colors. Center zones are shown in gray. Urban area demarcations as of 2005. Municipal names and borders (dark lines) are also shown. Source: Statistics Norway (2009a).




## 1.2 Research questions

The main research questions of the entire comparative study are the following:

1. What are the main differences and similarities in the ways the selected city regions in Norway (Oslo), Denmark (Copenhagen) and the Chinese Zhejiang province (Hangzhou) have acted on the challenges of a sustainable urban development in the fields of land use, transport infrastructure and mobility, and what are the causes of these differences and similarities?

2. What are the main differences and similarities between the national discourses on sustainable urban development in the fields of land use and transport infrastructure in the three countries, what are the causes of these differences and similarities, and to what extent have these discourses influenced the actual built structures?

The aim of the project is to explain similarities and differences in urban development by identifying causal mechanisms influencing urban structures. In each case city, it is therefore necessary to investigate key characteristics of the urban development that has taken place and explain why the development has followed this particular trajectory. For the Oslo case study, this leads to the following research questions:

1. How has the spatial urban structure (in terms of built environment, land use and transport infrastructure) developed since the 1990s, and how well does this development comply with criteria for urban development conducive to sustainable mobility?
2. How has the challenge of sustainable mobility been dealt with in relevant land use and transportation infrastructure plans?
3. How has the general concept of sustainable development been interpreted by different groups of actors, including the professions of urban and transport planners?
4. What kinds of principles, measures and spatial/physical solutions have been advocated by land use and transportation planners as favorable to a sustainable urban development, and to which extent have these principles, measures and solutions gained political support and been implemented?
5. To what extent can sustainability-relevant features of land use and transport infrastructure development in the Oslo region be explained by natural-geographic conditions, social structural conditions, cultural conditions and influential social actors?

These questions have been elaborated into a number of detailed sub-questions around which the empirical analyses presented in the next chapters have been structured.

## 1.3 An interdisciplinary approach

Our aim is to explain similarities and differences in urban development by identifying causal mechanisms influencing urban structures. The actions of various social agents make up one category of such influences. These actions are, however, themselves facilitated, modified or constrained by structural conditions, where the latter include both the natural environment, the existing man-made urban structure, as well as other structural and cultural properties of society.

The dominating ideas held by urban planners (including land use planners as well as transport infrastructure planners) are of particular interest in our study. Apart from their likely impacts on the actual urban development, we consider it interesting in its own right to compare the way such ideas have evolved in the three countries. In some cases, planners' ideas may converge into doctrines about urban development (Faludi and van der Valk, 1994). A doctrine comes close to what is often termed as a "hegemonic discourse" within a field of society (Hajer, 1995). The discourses among planners dealing with topics of urban land use and infrastructure development is therefore an important potential explanatory factor to be examined in the project.

Due to the complexity of conditions influencing urban development, theories focusing on different aspects of reality need to be combined in order to throw light on the research questions. The project has therefore taken a clearly interdisciplinary approach, attempting to integrate contributions from theories covering different fields. Theories of economic development may illuminate the very different backgrounds against which urban development has proceeded during the investigated period. Theories of spatial development and transformation of cities may also contribute to explain the strategies followed in a particular city in a given period. Theories of path dependency may illuminate the importance of previous strategic decisions on urban spatial and infrastructure development to current planning and

decision-making. Theories of political economy may point at the economic interests of local elites as a major driving force for an urban development where governmental authority is utilized to attract growth-inducing investments within its own territory. Discourse theories may illuminate the importance of power, legitimacy, and authority on decision-making about urban development. The importance and credibility attached to different types of knowledge may be influenced by power relations and are therefore often contested. Normative theories on sustainable urban development and mobility may be important points of reference for some participants in discourses on urban development. Such theories combine preferred values with substantive theories on the environmental consequences of various land use and transport infrastructure solutions in cities.

Since land use and public investments are usually under public control via legal measures and public funding, we may assume that the public decision-making processes are important factors in explaining the actual outcome. However, there may not be a direct link between the observed land use and infrastructure and the preceding public decision-making system and discourse. We must also seek explanations in market forces and social and cultural changes in civil society. The discourse on sustainability may have informed decision making, but knowledge may also be used only symbolically because the cost of implementing a policy may be considered too high.

## 1.4 Methods

Fairly similar research methods have been followed in each of the three city case studies, yet allowing for adaptation to local contexts and data availability. Empirically, the study has taken a bottom-up approach by first observing the urban development that has actually taken place in the case cities, and then tracing the main actors and mechanisms behind these events. Such a research design is sometimes called a 'backward mapping approach' (Elmore, 1985). When taking this approach we may, for example, find that decisions outside the government structure are as important as those within. The study is problem-driven rather than theory-driven: the cases and research methodology have not been chosen in order to test a particular, prefixed theory. Instead, theories have been used dialectically in a back-and-forth pendulum movement between theory and empirical observations in order to throw light on driving forces behind physical changes in urban structures and on the actions of various actors influencing urban change, as well as to guide the specification of the main research question (see above) into more detailed and theme-specific questions. As mentioned above, several theories appeared to be relevant the outset, but the emphasis to be laid on each of them became clear during the research process.

The following description applies to the Oslo case study.

Due to time and resource limitations, the description of the overall urban development has been limited to the strategic level, focusing on key indicators such as changes in the number of inhabitants and workplaces, changes in the amount of urbanized land, changes in population and workplace density, location of new development relative to the city center and public transport nodes, and the development of major transport infrastructure (urban highway and main public transport services).

In order to answer the research questions, information from previous research studies as well as new empirical data have been utilized. We have chosen to concentrate on the following empirical data sources:

Plans and policy documents:

- Municipal master land use plans and relevant regional plans: The Municipal Plans for the municipality of Oslo adopted in 2000, 2004 and 2008, the County plan for the surrounding Akershus county adopted in 2003, and a particular Regional Agenda plan for the county of Akershus adopted in 1998
- Selected strategic transport plans: The Oslo Packages 2 and 3, adopted in 2001 and 2006. These were agreements between national-government transport authorities, the county of Akershus and the municipality of Oslo about the funding of road infrastructure projects and public transport improvement in Oslo and Akershus.
- The Governmental White Papers “Better Environment in Cities and Towns” (2001-2002)

Articles in professional journals: In order to throw light on the Norwegian professional discourse on sustainable urban development in the fields of land use and transport infrastructure, 101 articles in the journal *Plan* have been investigated. The articles cover the period from 1994 to 2006.

Interviews: Eleven in-depth, semi-structured interviews were carried out with land use and transportation planners and policy-makers, some politicians, a manager of a property development company and a representative from a non-governmental environmental organization.

Several efforts have been made to secure a high validity and reliability of the research. The interviews were semi-structured and were aided by interview guides. All interviews were tape-recorded and transcribed. "Interpretation schemes" were developed to aid the interpretation of interviews and document, in order to facilitate a linking of the research questions and theoretical concepts of the study with the relevant parts of the transcribed interviews and investigated documents. Similar interpretation schemes were developed and used for the analyses of plans and policy documents and articles in the professional journal *Plan*.

# 2 Actual spatial development

## 2.1 Introduction

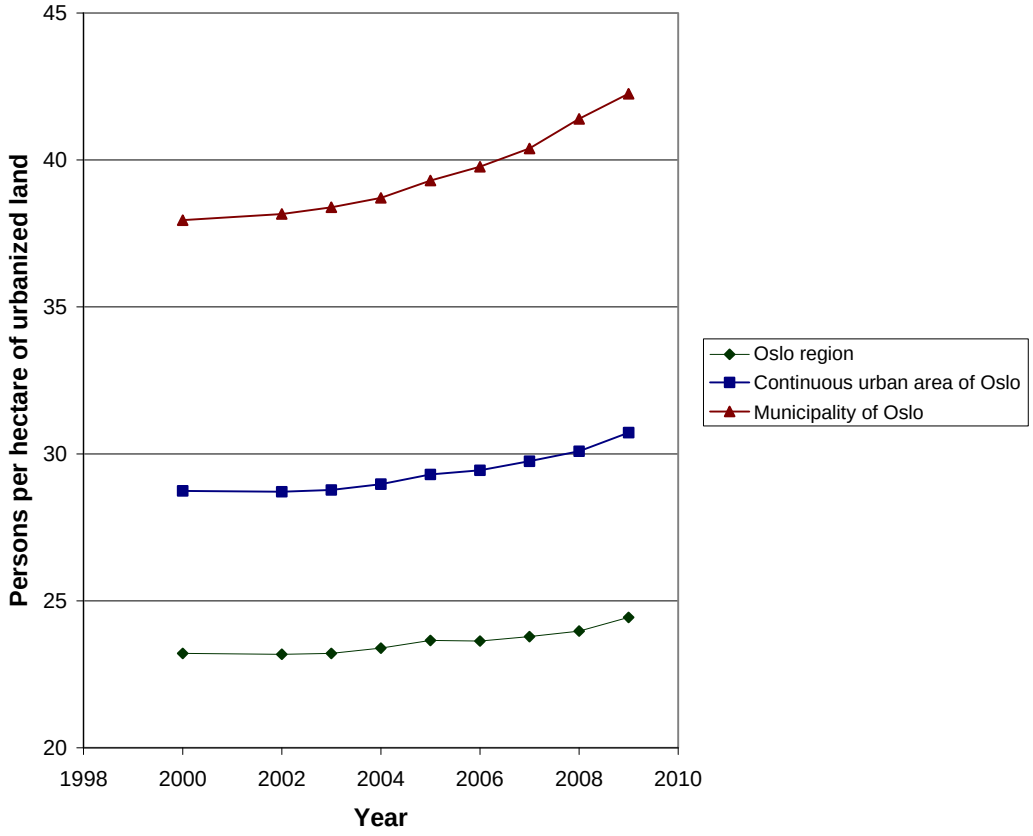
According to several authors, metropolitan-level decentralization of workplaces and residences is a strong and more or less general tendency in Europe. For example, Breheny (1995:87) holds that decentralization is the inevitable outcome of the expressed location preferences of people and firms. According to Sieverts (1999), new development in German urban regions typically takes place in the 'Zwischenland', i.e. in the areas *between* the cities, and not within or immediately adjacent to the cities. In Sieverts' view, cities can no longer be fitted into a hierarchic system according to central place theory. Instead, they should be understood as a network of nodes, where there is a spatially more or less equal, scattered distribution of labor with spatial-functional specializations. Such net-shaped cities or city regions have polycentric instead of monocentric or hierarchic center structures, and constitute larger, fragmented and very complex territories.

Empirical data show that population densities were reduced between 1980 and 1990 in a number of large European cities (Newman & Kenworthy, 1999). In the post-communist East European countries, urban sprawl is proceeding 'at a pace which leaves anything experienced in the west far behind' (Schwedler, 1999). However, actual urban developmental trends in Europe are far more nuanced than what has been claimed by the most 'decentralization-deterministic' debaters. In some EU countries, including Denmark, Spain and the UK, the tendency of sprawl is more moderate and combined with considerable inner-city regeneration and densification (UN/ECE, 1998; Damsgaard & Olesen, 2000). In Sweden and Norway, a long period of spatial urban expansion since the 1950s has been succeeded by a trend of reurbanization during the latest couple of decades (Statistics Sweden 1992, 2002; Larsen & Saglie, 1995; Statistics Norway, 2009b). A considerable renewal of older housing areas and transformation of derelict and underutilized industrial and harbor areas has taken place, resulting in a substantial growth in the number of workplaces and dwellings in inner-city areas. During the period 2000 – 2009, the average density of all Norwegian urban settlements has increased by 1.7 %. The density increase was in particular high in the largest cities (Statistics Norway, 2009b).

## 2.2 Population density development

Figure 2.1 shows how urban population densities have developed within the entire Oslo region (below); the continuous urban area of Greater Oslo (in the middle) and within the part of this urban area belonging to the Municipality of Oslo (above) from 2000 until the beginning of 2009.

*Figure 2.1: Population densities 2000 - 2009 within the urbanized land of the Oslo region (below), the continuous urban area of Greater Oslo (in the middle) and within the urbanized land of Municipality of Oslo (above).* Persons per hectare of urbanized land. Source: Statistics Norway, 2009c and d.




Within the Oslo region the population increased from 966,000 to 1,105,000 during these eight years, whereas the size of the urbanized land increased from 416 to 452 square kilometers during the same period. The urban population density within the entire region has thus increased from 23.2 persons per hectare of urbanized land to 24.4 persons per hectare between 2000 and 2009.

For the continuous urban area of Greater Oslo[3], the population increased from 773,000 in 2000 to 876,000 in 2009, while the urban area expanded from 269 to 285 square kilometers. Accordingly, the population density within the urban area increased from 28.7 to 30.7 persons per hectare. Within the municipality of Oslo, which makes up the central part of the continuous urban area of Greater Oslo covering 48 % of the urban area and including 65 % of the population, the density increase was substantial. Here, the urban population density increased from 37.9 persons per hectare in 2000 to 42.3 persons per hectare in 2009, i.e. an increase of as much as 11.3 % over the nine years. This reflects an increase in the urban population from 504,000 to 573,000, accompanied with a modest increase in urban area from 133 to 136 square kilometers.

As can be seen above, the overall increase in urban population density within Greater Oslo is primarily due to a strong density increase within the Municipality of Oslo. In the remaining part of the continuous urban area of Greater Oslo, the urban population

[3] The so-called ”Oslo tettsted” as defined by Statistics Norway.

density has increased slightly (from 19.8 to 20.3 persons per hectare, i.e. a 2.7 % increase). In the parts of the Oslo region situated outside the continuous urban area of Oslo there has been an increase in urban population density from 13.1 to 13.7 persons per hectare, i.e. by 4.7 %).

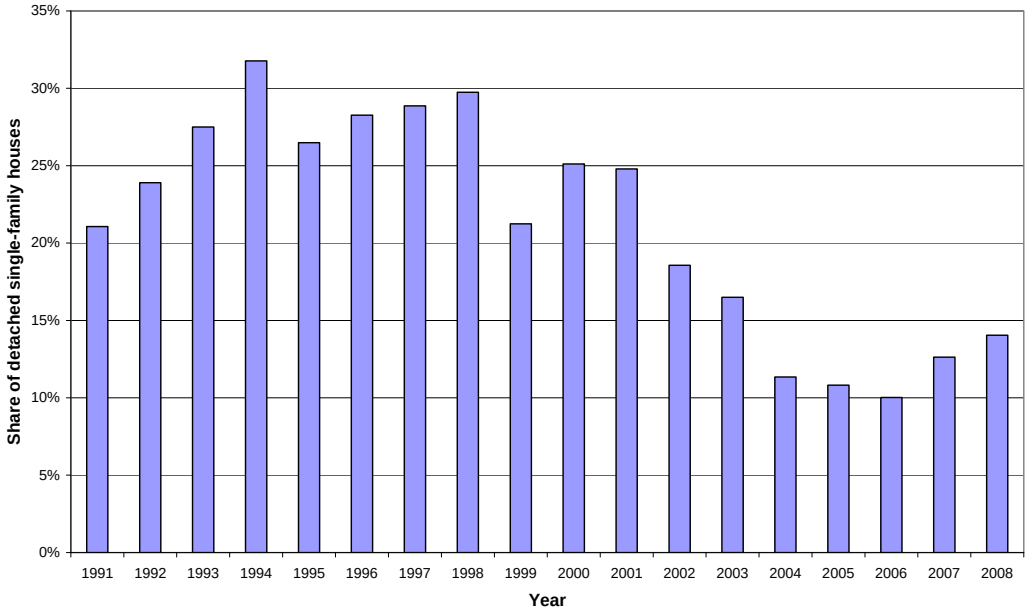
The process of urban densification has been going on for a longer time than only since 2000. Unfortunately, data for earlier periods are not as reliable and exact as the data from 2000 and on, and due to different urban area demarcation techniques the earlier data are not completely comparable with the ones covering the period since 2000. According to the Municipality of Oslo, Department of Finance and Development (2002), the population living within the continuous urbanized area of Greater Oslo increased by 11 % from 1990 to 1999, whereas the size of the urbanized land increased by only 2 % during the same period. This implies a population density increase of nearly 9 % throughout the 1990s.

Before 1990, the urban development was more land-extensive, especially in the period from the 1950 to mid 1970s. According to Statistics Norway (1982) and Engebretsen (1993), the size of the built-up parts[4] of the continuous urbanized area of Greater Oslo increased from 102 $km^2$ in 1955 to 127 $km^2$ in 1965, 157 $km^2$ in 1975, 167 $km^2$ in 1980 and 183 $km^2$ in 1992. This implies a decrease in population density of about 1.4 % annually from 1955 until the early 1980s. In the period 1984-1992, the reduction in population density almost came to a halt, with an annual decrease of only 0.1 %. Moreover, urban development in the period 1984-1992 took place on average considerably closer to the city center than in the previous decades. Thus, within the continuous urban area of Greater Oslo, the change in urban development from predominantly outward expansion to densification and reurbanization seems to have taken place in the early 1980s. The stabilization of population density in the 1980s was then followed by an increase in population density since the early 1990s, especially in the municipality of Oslo.

In the part of the Oslo region not belonging to the continuous urbanized area of Greater Oslo, low-density development continued for a longer time, with a high share of detached single-family houses among the new residences constructed. For the entire Oslo region, detached single-family houses thus accounted for more than one quarter of the new dwellings constructed in the 1990s. Since 2002, this share has been significantly reduced, especially from 2004 and on (see Figure 2.2). On average for the entire period 1991 – 2008, detached single-family houses account for 19 % of all new dwellings.

[4] The urbanized land within which population densities in the period 2000-2009 as well as the figures from the period 1990 to 1999 have been calculated includes built-up areas as well as non-built areas like farmland surrounded by urban land, small forests, lakes and other smaller non-built areas. The data from Statistics Norway and Engebretsen covering the period from 1955 to 1992 have, however, comparable figures across time only for the built-up parts of the urbanized land. The built-up land in the figures from 1955 to 1992 includes residential, industrial and commercial areas, public agencies and services, traffic area as well as public parks, graveyards and sport fields. (Statistics Norway, 1982; Engebretsen, 1993.)

*Figure 2.2: Proportion of detached single-family houses among completed new residences 1991 - 2008 within the Oslo region.* Source: Statistics Norway, 2009f and g.

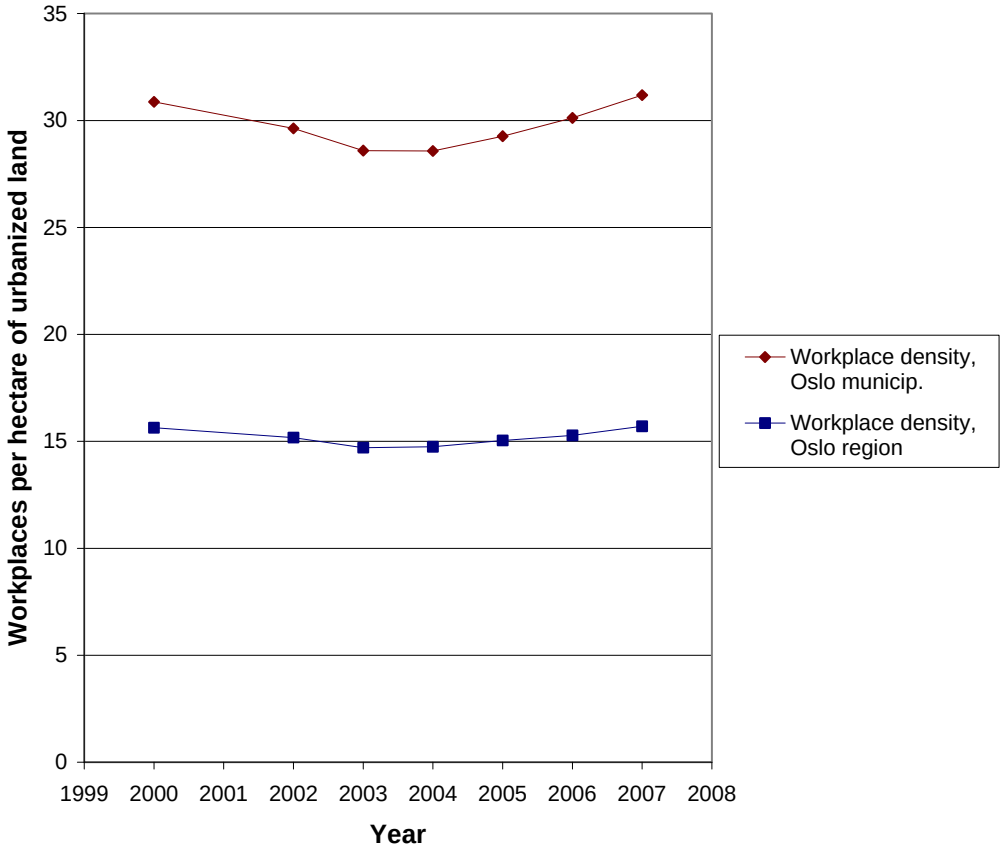



## 2.3 Job density development

Figure 2.3 shows how job densities have developed within the entire urbanized land of the Oslo region (below) and within the urbanized land within the Municipality of Oslo (above) from 2000 until 2007.

As can be seen, urban job densities in the region as well as within the municipality of Oslo at the end of the period were pretty similar to those at the beginning, albeit with a drop around 2003-2004 due to loss of jobs within the core municipality. For the period as a whole, the number of jobs per hectare of urbanized land within the municipality of Oslo increased from 30.9 to 31.2. Within the region as a whole, there was only a very slight change (from 15.6 to 15.7).

*Figure 2.3: Job densities 2000 - 2007 within the urbanized land of the Oslo region (below) and within the urban area of Municipality of Oslo (above).* Persons per hectare of urbanized land[5]. The figures refer to the period October-December in each year. Source: Statistics Norway, 2009d, e and h.




## 2.4 Location of workplaces and residences

### Regional-scale location of residential development

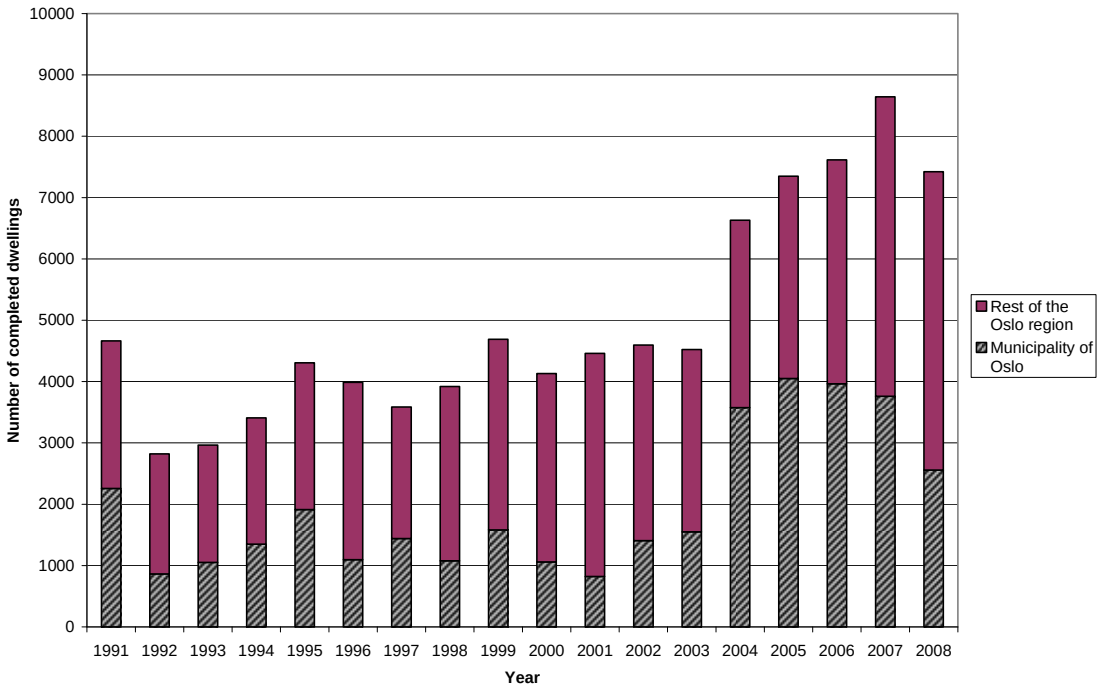
In spite of a considerable population growth in the urban population within the municipality of Oslo (from 505,000 to 558,000 inhabitants during the period 2000 – 2008), the share of urban population of the entire Oslo region living within the borders of the core municipality has decreased slightly from 52.2 % to 51.6 %. Conversely, the proportion of the region-level urban population living outside the continuous urban area of Greater Oslo has increased from 19.9 % to 20.7 %. The proportion living within the outer parts of the continuous urban area of Greater Oslo (i.e. outside the municipality of Oslo) has remained virtually constant at a little below 28 %. Thus, at a regional scale, there has been a slightly stronger relative population growth in the periphery than in the center, but overall the growth has been considerable in all parts of the region (averaging more than 1.4 % annually for the entire Oslo region). This reflects a high pace of residential development in the center

[5] The figures are not quite exact, because the statistics on the number of jobs do not distinguish between urban (i.e. within urban settlements) and rural job locations. However, as the size limit for a settlement to be classified as urban is very low (200 inhabitants), we assume that jobs located outside urban settlements do not represent any important source of error. The number of such jobs within the region and the municipality of Oslo has hardly changed much during the period.

as well as in the peripheral urban settlements, albeit with a slightly more rapid increase in the latter.

The population development in the various parts of the region reflect the distribution of housing construction between the different municipalities. As can be seen in Figure 2.4, most of the new residences in the Oslo region since 1991 have been constructed outside the municipality of Oslo. On average for the period 1991 – 2008, 39 % of new dwellings have been constructed within the municipality of Oslo and 61 % in the rest of the metropolitan area. These shares have, however, fluctuated considerably, with higher-than average percentages in the core municipality especially from 2004 to 2007, but also occasionally in the early and mid 1990s. It is worth noticing that the total number of dwellings built annually has also been high since 2004, and together with the high percentages built in the municipality of Oslo these years this has contributed to the very high population density increase experienced in the municipality of during the most recent few years.

*Figure 2.4: Completed new residences 1991 - 2008 within the municipality of Oslo (blue, diagonal pattern) and within the rest of the Oslo region (red).* Source: Statistics Norway, 2009f and g.




## Regional-scale location of jobs

For the region as a whole, the number of jobs grew by 47,300 from 2000 to 2007. The growth was 11,300 within the municipality of Oslo and 36,000 in the remaining part of the region, which implies that 24% of the job growth took place within the core municipality. The municipality of Oslo has during the whole period had the majority of the region's workplace, but this share dropped from 63.1 % to 60.7 % from 2000 to 2003. After that, Oslo's share of the total number of jobs within the region has remained fairly constant.

For the region as a whole, there was job growth of 7.3 % over the period 2000-2007, which implies an annual average of 1.0 %. Oslo, with a total growth of 2.7 % during the period, is way below the regional average. Job growth has in particular taken place in Oslo's western neighbor municipality Bærum (net increase 12,500 jobs, corresponding to a growth of 23 %), the municipality of Skedsmo at the eastern fringe of the Greater Oslo continuous urban area (net increase 4,500 jobs, corresponding to a growth of 21 %), and in municipality of Ullensaker in the north-eastern part of the Oslo region (net increase 3,200 jobs, corresponding to 17 % growth). The job growth in the latter municipality must be seen in the light of the location of Oslo's new airport to Gardermoen in the same municipality in the late 1990s.

**Residential and workplace location within the municipality of Oslo**

Within the municipality of Oslo the construction of dwellings as well as commercial buildings has to a high extent taken place in the inner and central parts. This can be seen in Figures 2.5 and 2.6, where the construction of dwellings and commercial buildings within different parts of the Municipality of Oslo during the period 1995 - 2006 is shown by means of area-proportional circles. In particular, a high proportion of residential development has taken place within four and a half kilometer from the city center (marked with an asterisk on the maps). Commercial development has also mostly taken place within this radius, but with a lower proportion in the innermost areas, compared to housing construction. Instead, considerable development has taken place around public transport nodes about four kilometers away from the city center, mostly on derelict or low-utilized industrial areas. One of these nodes (Nydalen, in the northern part of the inner area) has been established as a result of a new metro ring opened in 2006. The area in the western part of the city where a large proportion of commercial development has taken place (Skøyen) already has good railway, light rail and bus connections both to the city center and westwards and is also the departure of a ring bus line around the inner city.

*Figure 2.5: Completed, commenced and approved residential development 1996-2006 within different parts of the Municipality of Oslo. Number of dwellings indicated by area-proportional circles.* The city center of Oslo is shown with an asterisk. Source: Municipality of Oslo, 2007.

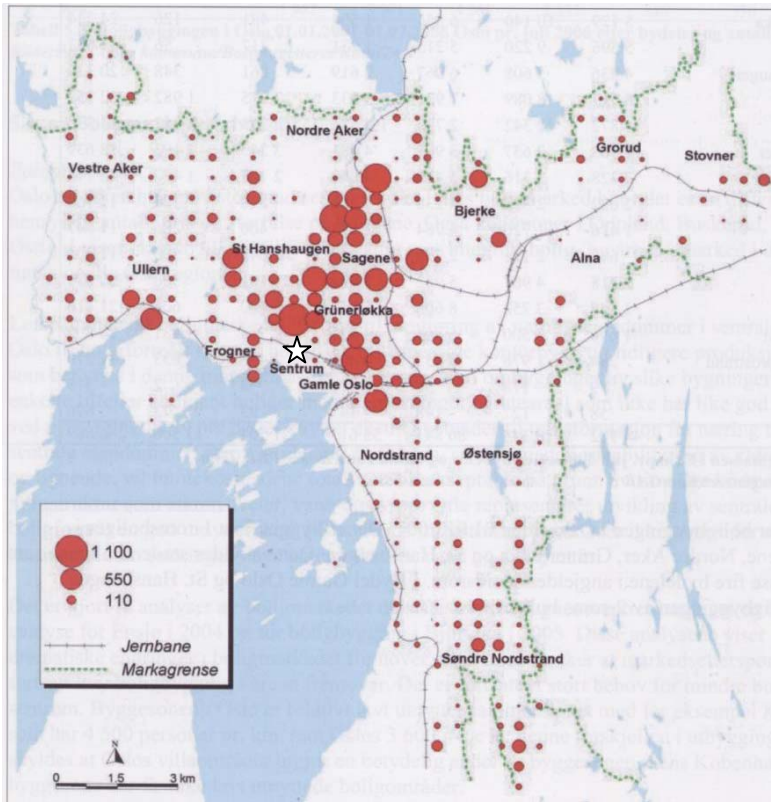
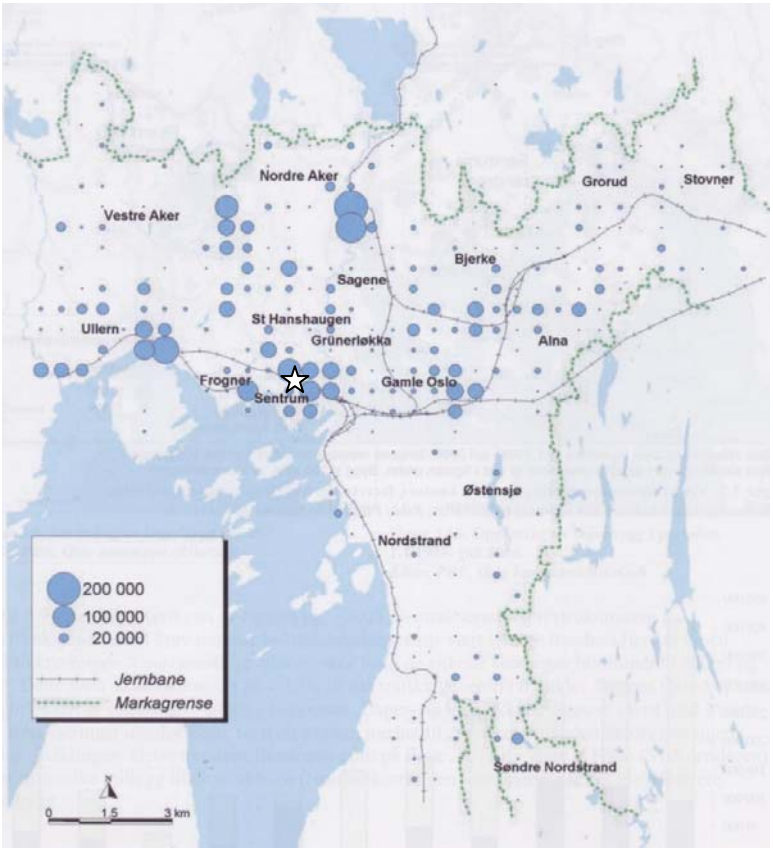
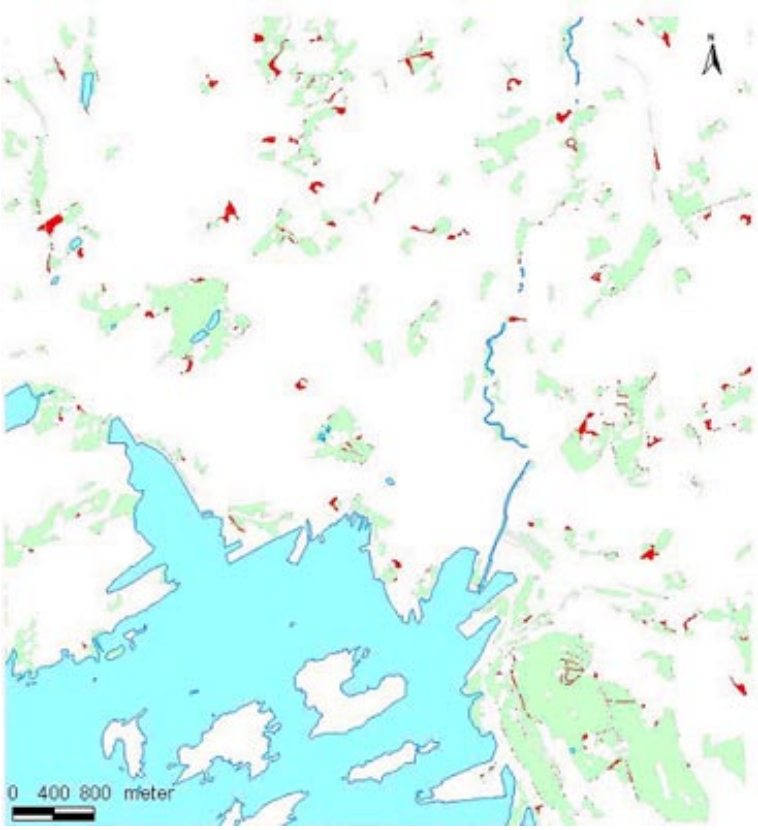


*Figure 2.6: Completed, commenced and approved commercial development 1996-2006 within different parts of the Municipality of Oslo. Number of square meters floor area indicated by area-proportional circles.* The city center of Oslo is shown with an asterisk. Source: Municipality of Oslo, 2007.




One might fear that the strong densification within the urban area demarcations of Oslo would lead to a drastic decimation of the green areas within the city. However, an overwhelming part of the densification has taken place on "brownfield" areas, mainly derelict industrial, warehousing and harbor areas, and in some cases also traffic areas. Yet, some construction has taken place on urban green areas, e.g. in order to make space for new kindergartens or schools in districts where densification has resulted in population increases exceeding the capacity of existing social infrastructure. In Figure 2.7, vegetation-covered areas converted into construction sites during the period 1992 - 2002 are shown. Although the time period to which this figure refers differs somewhat from our densification data, the development has probably not been very different during the period 2000 - 2007. During the ten years to which Figure 2.7 refers, the green areas within the urban area of the Municipality of Oslo were reduced by seven per cent. This illustrates the fact that even though densification is favorable to a number of sustainability concerns, it also has its obvious disadvantages. In order to avoid a steady reduction of the green areas within the urban demarcation as densification continues, a strong protection of intra-urban green areas will be required. In its most recent municipal plan, Oslo goes for a more strict regulation against conversion of such areas, combined with re-establishing green recreational areas and re-opening watercourses in old industrial areas undergoing a transformation.

*Figure 2.7: Green recreational areas in Municipality of Oslo within the urban area demarcation (green) and previous such areas converted into built-up areas during the period 1992 - 2002 (red).* During this period, 7.1 % of the original amount of intra-urban green areas was converted into built-up areas. Source: Directorate for Nature Management, 2007.

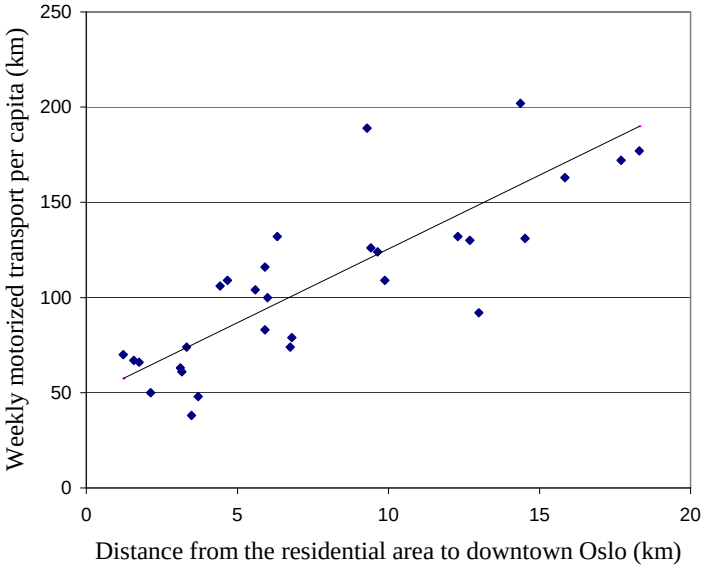



## 2.5 Consequences in terms of motorized travel

The densification of residences has implied that new dwellings have been built on average at a closer distance from downtown Oslo than what would have been the case if the built-up area of Greater Oslo had continued to expand outward like it did until the late 1980s. In particular, the substantial residential development in the inner districts of Oslo (cf. Figure 2.5) implies an increase in the population living close to the concentration of workplaces and service facilities found in the central and inner parts of the metropolitan area. This has contributed to reduce the overall amount of motorized travel and in particular travel by car, compared to outward urban expansion. Based on data from 1992, Figure 2.8 shows how the average weekly distance traveled by motorized modes of transport varies among survey respondents living in residential areas located at different distances from the city center of Oslo.[6]

[6] The relationships illustrated in Figures 2.6 to 2.8 are in line with findings in a number of other cities, including Bergen (Duun et al., 1994), Helsinki (Lahti, 1995), Paris (Fouchier, 1997), Aalborg (Nielsen, 2002), Frederikshavn (Næss & Jensen, 2004), Copenhagen (Næss, 2006), Santiago de Chile (Zegras, 2006) and Hangzhou (Næss, 2009). These urban areas span from 35.000 inhabitants (Frederikshavn) to more than 4 million inhabitants (Hangzhou).

*Figure 2.8: Average weekly distance traveled by motorized modes within the Greater Oslo region among respondents from residential areas located in different distances from downtown Oslo.*



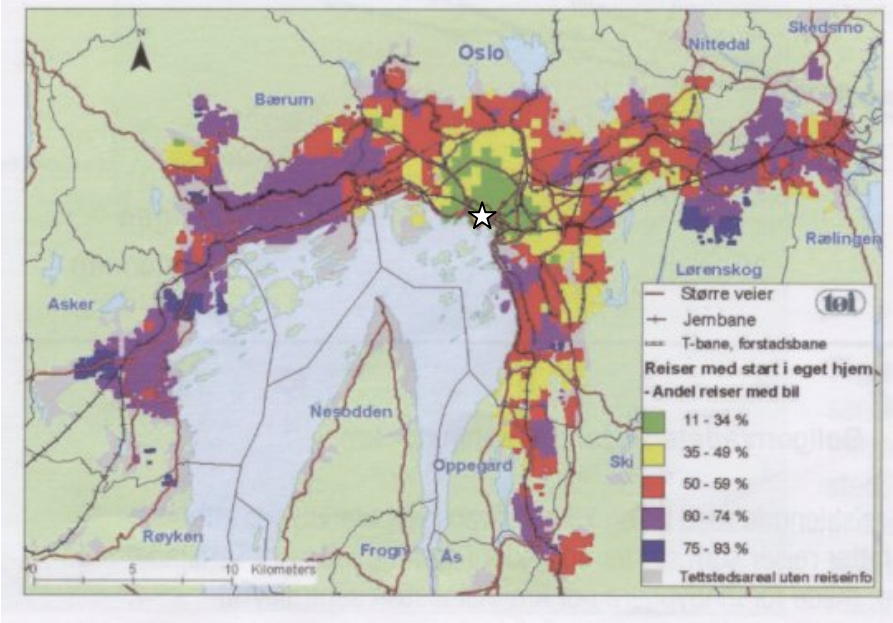

Official trips not included. The regression line shows the relationship when controlling for a number of demographic, socioeconomic and other urban structural factors[7]. Level of significance for the controlled relationship: 0.000. N = 321 households in 30 residential areas. Source: Næss, Røe & Larsen (1995).

The regression line shows the relationship between motorized traveling distance and the location of the residence relative to the city center when controlling for a number of socioeconomic variables. Other things equal, respondents living in the peripheral parts of Greater Oslo travel on average three times as long by motorized modes of transport within the region as their counterparts living closest to the city center. We also see that the average values of the various residential areas vary somewhat around the regression line. In part, this reflects that they differ in terms of distances from local centers, railway stations etc., but also in terms of income levels and other socioeconomic characteristics.

A central location of residences contributes not only to reduce the amount of motorized transport, but also reduces the proportion of trips carried out by car. This is illustrated in Figure 2.9, where different districts of Greater Oslo have been given different colors according to the percentages of trips from home that are carried out by car. As we can see, the proportion of trips by car is low in the districts close to the city center (indicated by means of an asterisk) and high in the outskirts of the urban area.

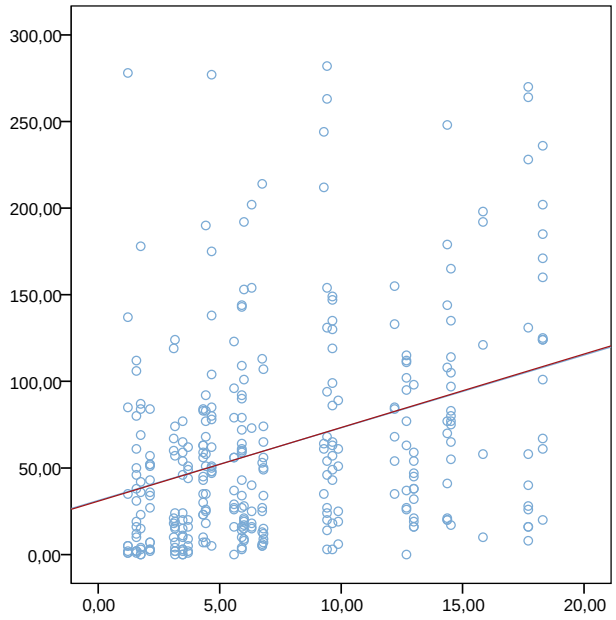
[7] Cars per adult household member, number of children in the household, income per household member, average age among adult household members, proportion of women among adult household members, local area density, provision of local service functions near the residence, public transport provision near the residence.

*Figure 2.9: Percentages of trips originating in the home carried out by car among residents living in different parts of Greater Oslo.* The city center of Oslo is shown with an asterisk. Source: Engebretsen, 2005




Based on the same data set as Figure 2.8, Figure 2.10 shows how energy use for transport varies among the respondents living in the 30 investigated residential areas located at different distances from the city center of Oslo. Controlling for a number of socioeconomic variables, energy use for transport within the urban region is nearly four times as high among the respondents living in the most peripheral of the investigated residential areas than among those respondents living closest to the city center. As we can see, the energy consumption of the individual respondents differs widely, even among respondents living at the same distance from downtown. This reflects the obvious fact that travel activity is influenced by a number of circumstances, of which residential location makes up only one category. However, when considering patterns of travel behavior among a large group of individuals and households we find a strong and statistically very certain relationship between residential location and energy use for transport within the region.

*Figure 2.10: Weekly energy use for motorized transport within the Greater Oslo region among respondents from residential areas located in different distances from downtown Oslo.*
Official trips not included. The regression line shows the relationship when controlling for a number of demographic, socioeconomic and other urban structural factors[8]. Level of significance for the controlled relationship: 0.000. N = 321 households in 30 residential areas. Source: Næss, Røe and Larsen (1995).

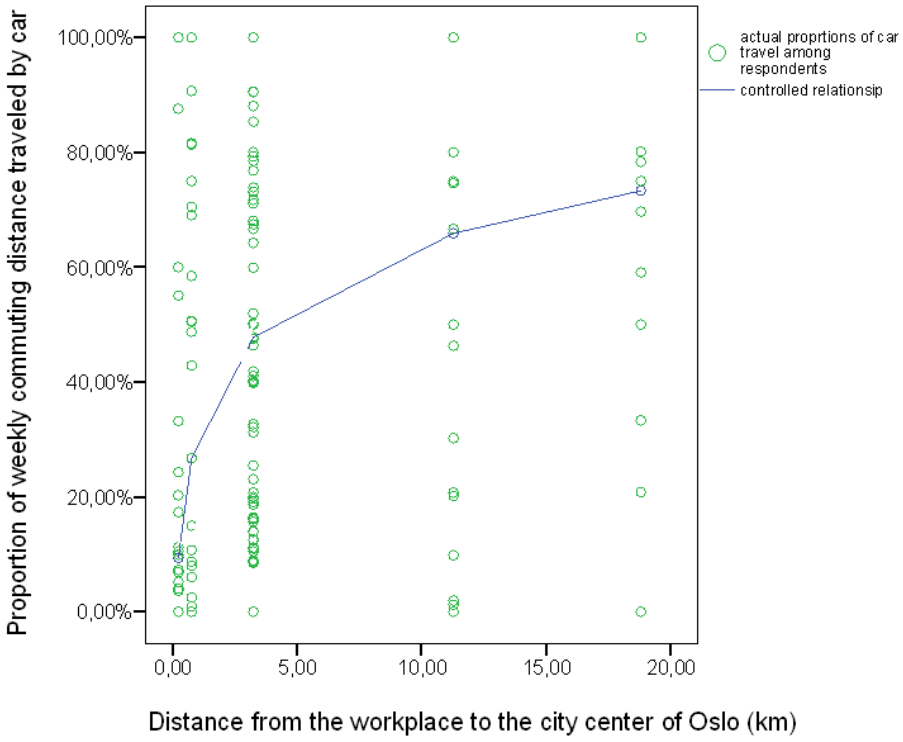



The concentration of commercial development to the inner and central parts of Greater Oslo (cf. Figure 2.3) has also been favorable in terms of reducing energy use for transport. As can be seen in Figure 2.11, the proportion of travel to and from the workplace carried out by car is considerably lower among employees at workplaces located close to the city center of Oslo than among employees at suburban workplaces. In the figure, the line shows the relationship between residential location and the percentage of commuting distance traveled by car when controlling for a number of socioeconomic variables. In particular, car commuting is low among workplaces located in the central core of Oslo.

Some planners have believed that the lower use of car as travel mode for journeys to central workplaces would be compensated by shorter traveling distances to decentralized workplaces interspersed with suburban residential areas. However, in the contemporary highly specialized and high-mobility society, people do not only choose workplaces (or recruit employees) from within their local neighborhood. In the study on which Figure 2.11 is based, employees at the most peripheral workplaces had the longest average commuting distances among the whole sample.

[8] Cars per adult household member, number of children in the household, income per household member, average age among adult household members, proportion of women among adult household members.

*Figure 2.11: Average proportions of weekly commuting distance traveled by car among employees at workplaces located in different distances from downtown Oslo.* Per cent. N = 465 employees at 6 workplaces. The broken regression line shows the relationship when controlled for a number of demographic and socioeconomic factors[9] (with the individual employees as units of analysis, N = 422) Level of significance for the controlled relationship: 0.000. Source: Næss and Sandberg (1996).




Thus, energy use for commuting trips varied considerably along the center-periphery gradient, with two and a half times higher average energy use for commuting among employees of the most peripheral workplace (21 kWh daily) than among employees of the two inner-city workplaces (9 kWh daily).[10]

Exceptions from the conclusion that a central workplace location gives the least use of energy are functions clearly directed towards the local neighborhood – for example grocery stores, post offices, elementary schools, secondary schools and kindergartens. For such functions, short distances for pupils and visitors are more important than the employees' journeys to work. In Oslo Metropolitan Area, there has been a substantial reduction in the number of post offices along the increasing replacement of paper-based communication by electronic communication. Although

[9] Age, sex, income per household member, cars per adult household member, driver's license, disposing a company-owned car, number of children in the household, occupational grade, proportion of working days when errands were carried out in connection with the commuting trip, number of workforce participants in the household.

[10] These findings about the travel and energy impacts of workplace location are in line with results from studies in a number of other cities, including Copenhagen and Danish provincial cities (Hartoft-Nielsen, 2001), Trondheim (Strømmen, 2001; Meland, 2005) and Finnish urban areas (Martamo, 1995). In smaller cities, the differences in travel behavior between employees at central and peripheral workplaces are smaller than in the largest cities, probably due to the lower congestion levels in the central areas of smaller cities and the lower provision of public transport services in these cities.

this has probably necessitated somewhat more travel for population groups without access to the internet, the centralization of post offices has hardly had any impacts worth mentioning on the overall energy use and emission levels from transportation. For other types of local services than post offices, the availability of facilities in the local neighborhoods of Oslo Metropolitan Area has hardly changed very much. There was a period in the 1980s and early 1990s when several out-of-town shopping malls were established, but since the mid 1990s (partly due to policy provisions introduced by national planning authorities) the establishment of car-based shopping centers has been much more moderate in the region.

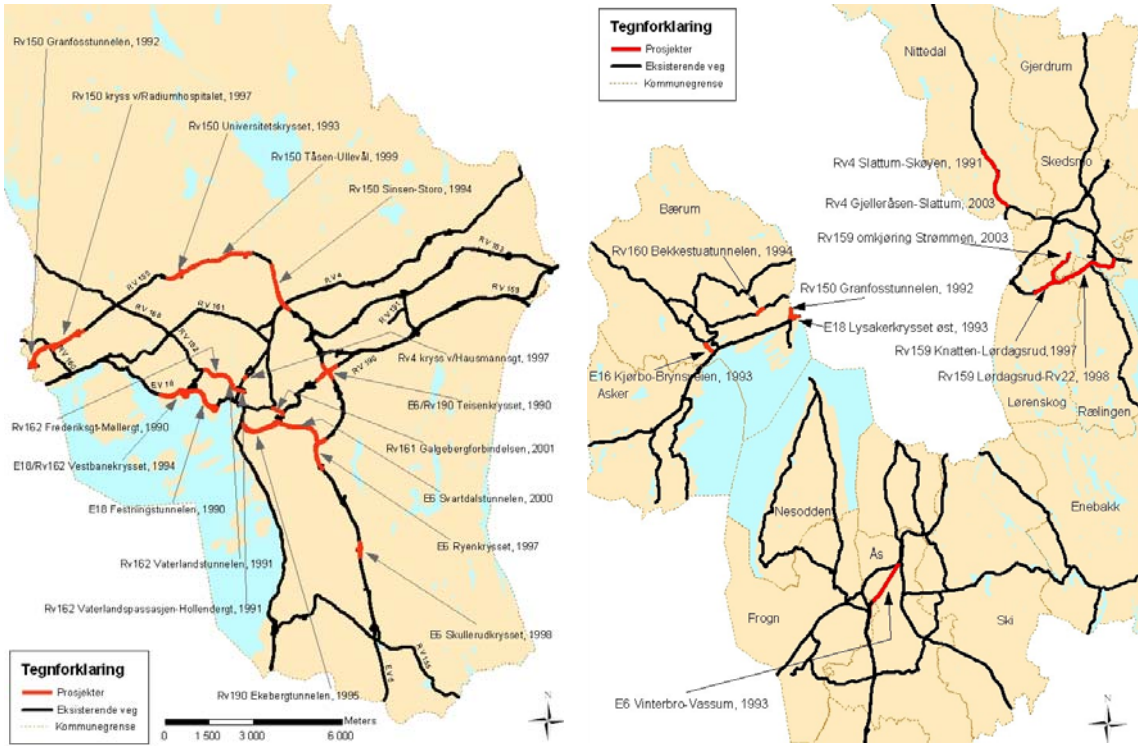
## 2.6 Transport infrastructure development

Whereas land use development in the Oslo region – and in particular the municipality of Oslo – has to a high extent been in line with key principles of sustainable urban development, the development of the transportation infrastructure gives a more mixed impression. The bulk of transport infrastructure investments in Greater Oslo have been spent on increased road capacity. Surely, some of these roads (often in tunnels) have led traffic outside residential or central city areas and thus relieved these areas from noise and local air pollution.

Unfortunately, the statistics on completed transport infrastructure projects are generally poor in Norway, and this also applies to the Oslo region. Some figures are, however, available from a study carried out by Lian (2004). In this study, the implementation of the so-called Oslo Packages 1 and 2 was evaluated.[11] Figure 2.12 shows the major road projects funded by Oslo Package 1 within the municipality of Oslo and in the county of Akershus. The projects were completed during the period 1990-2003.

[11] These Packages were transport infrastructure investment plans based on cooperation between the Municipality of Oslo, the County of Akershus, the Ministry of Transport and the regional office of the Highway Directorate, based on a considerable contribution of revenues from a toll ring. The Oslo Package 1 included mostly road projects, whereas public transport improvements were the main focus of Oslo Package 2.

*Figure 2.12: Road projects funded by Oslo Package 1 and implemented 1990-2003 in the municipality of Oslo (left) and the county of Akershus (right).* Years of opening are shown for each road link. Source: Lian (2004), pp. 5-6.



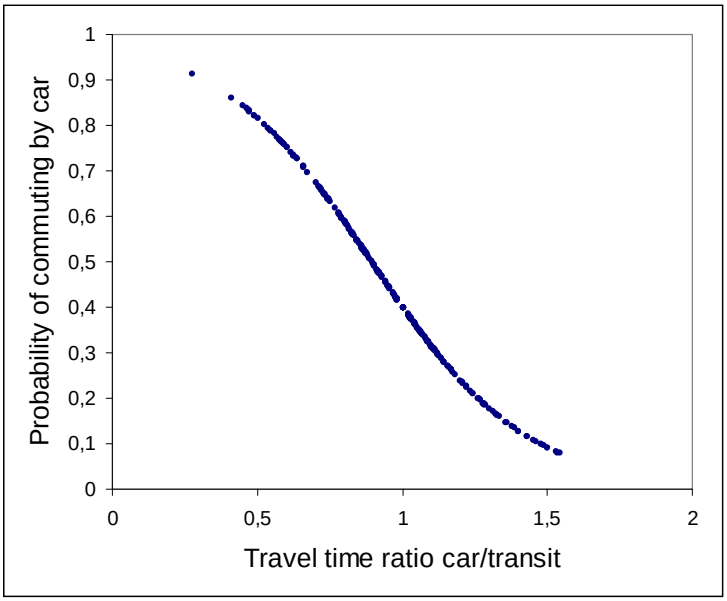

There have also been improvements in the public transport system. Most of these improvements have been funded by the Oslo Package 2. In the municipality of Oslo, the most important achievements are a new metro ring line supplementing the existing radial urban rail lines, new and improved streetcar lines with a higher frequency of departures, and a southward extension of one of the ordinary, radial metro lines. Moreover, the frequency of departure on some metro lines was increased in 2008. In the county of Akershus, the only types of public transport improvements are the establishment of separate bus lanes along some of the major transport arteries, and improved design of some public transport terminals wit an eye to ease shifts between different modes of travel (e.g. between bus and train). The latter two types of improvements have also been implemented along some roads and for some bus terminals and urban rail stations within the municipality of Oslo, along with changes in the setup for traffic lights along one of the major ring roads in such a way that the light automatically changes to green when the bus approaches.

The expenditures for the road projects completed as part of Oslo Package 1 was NOK 11 billion, whereas the public transport improvements of Oslo Package 2 (so far only partly completed) has a budget of NOK 15.6 billion, most of which set aside for the construction of additional tracks on the major rail lines from Oslo to the west and south. The substantial public transport investments are likely to contribute, other things being equal, to reduced car travel in the region. However, due to the substantial road capacity increases that have also taken place, this effect has to a high extent been offset and even outweighed. In congested urban areas, better-flowing traffic tends to induce a number of people to travel by car who have previously left their car in the garage because of congestion. By and large, the roads will fill up again, but the proportion of car drivers will then be higher, and the number of transit

passengers (and ticket revenues for the transit companies) will be lower (Strand et al., 2009).

Based on a study of travel modes for journeys to work among residents of western suburbs of Oslo working in the downtown area, Figure 2.13 shows how the likelihood of commuting by car varies with varying ratios of door-to-door travel times by car and transit (Næss, Mogridge and Sandberg, 2001.). The figure applies to male car-owning commuters holding a driver's license, and having easy parking facilities at the workplace. A number of other variables influencing the modal choice were also controlled for.

*Figure 2.13: Probability of commuting by car at varying ratios of door-to-door travel times by car and transit.*
N=261 commuters living in western suburbs of Oslo and working in the downtown area. The probability levels apply to male respondents holding a driver's license, with a high car-ownership level and good parking conditions at the workplace. The following variables have been kept constant at mean values: income level, education level, age, travel expenses paid by the employer, and errands on the way home from work. Sig. = 0.0000. Source: Næss, Sandberg & Mogridge (2001)




When car and transit were equally fast, the probability of commuting by car was 40 per cent. When car was 20 per cent faster than transit, the probability of going by car was 59 per cent. Increased road capacity leading in a short term to better-flowing traffic is therefore likely to change the modal split in favor of the least energy-efficient mode. In a longer term, congestion is likely to occur again (Mogridge,1997). The low average probability of commuting by car among the respondents must be seen in the light of the fact that the workplaces were all located in the downtown area of Oslo, cf. also Figure 2.11. However, other studies in Greater Oslo show that the choice of travel mode is considerably influenced by the travel time ratio between car and public transport also for trips with destinations outside the central and inner parts of Oslo (Engebretsen, 1996).

According to Lian (2004), traffic in the municipality of Oslo and the county of Akershus increased by 24 % during the period 1990-2002. This is one percentage point lower than the national average, in spite of the fact that the number of

inhabitants and jobs as well as the average income level has increased at a considerably faster pace than for Norway as a whole. In particular, the traffic growth has been moderate within the municipality of Oslo, where the traffic was only 13 % higher in 2001 than in 1990. In the county of Akershus, the increase was 34 %. Adjusting for the stronger-than-average growth in population, jobs and income in the region during the period, the Akershus traffic growth rate is on level with the general national trend. (Lian, ibid.) Based on data covering the period 1992 – 2005, the Municipality of Oslo (2007) estimates traffic growth within the municipal borders to be 25 %, compared to a national average of 34 %. During this period, the traffic in Akershus grew by as much as 48 %.

Oslo has 122 km of bike paths within its municipal borders. This is only about one third of the corresponding figure for Copenhagen. During the most recent years only very few kilometers of new bike paths have been constructed (5 km over the period 2005-2008) (Aftenposten, 2008).

## 2.7 Concluding remarks

Compared to Oslo's development in the postwar period until the early 1990s, and also compared to current urban development in most European cities, Oslo has during recent years managed to combine high growth in population and the building stock with low encroachments on natural and cultivated areas and a moderate traffic growth. For the metropolitan region of Oslo as a whole (1.1 million inhabitants), the population density within the built-up areas increased by 5.3 % from 2000 to 2009. Within the municipality of Oslo the population increased from 504,000 to 573,000 during the same period, whereas the built-up zone increased only very slightly from 133 to 136 square km. This implies an 11.3 % population density increase within the municipality of Oslo from 2000 to 2009.

Judged against European ideals for sustainable urban development, Oslo – and in particular the core municipality – can thus be considered as a case of 'best practice'. In 2003, Oslo received the European Sustainable City Award in competition with 60 other cities, yet another indication of a city showing a high environmental awareness in its planning and development.

Still, even 'the best pupil in the class' of European cities has not been able to obtain more than a partial decoupling between urban development and negative environmental consequences. Through its compact urban development, improvements in the public transport system and the presence of a road toll ring around the inner parts of the city, the municipality of Oslo managed to limit traffic growth to 25 % during the period 1992 - 2005, compared to 34 % for the country as a whole (where the population growth rate was much lower than in Oslo). Even though this represents a major achievement compared to a number of other cities nationally and internationally where traffic grows at a much higher pace, the development is still far from meeting the targets of environmentally sustainable mobility.

# 3 Investigated land use and transport infrastructure plans

## 3.1 Introduction

This chapter presents a synthesizing analysis of eight investigated plans and policy documents dealing with land use and transport planning. Our focus will be on the ways in which the investigated documents interpret and formulate strategies in relation to the challenges of sustainable mobility in urban development. The presentation is structured around 16 detailed research questions. The synthesizing analysis is based on short (four to eight pages each) analyses of the individual plans and policy documents investigated. The eight investigated documents are the following:

- The 2000 Municipal Plan for Oslo
- The 2004 Municipal Plan for Oslo
- The 2008 Municipal Plan for Oslo
- The 2004 County plan for Akershus
- The 1998 Partial County Plan for Akershus (Regional Agenda 21)
- The Oslo Package 2 transport investment agreement
- The Oslo Package 3 transport investment agreement
- The Governmental White Paper ('Stortingsmelding') no. 23 (2001-2002) Better environment in cities and towns

Each plan and policy document was first analyzed, using a common checklist. These interpretations of individual documents, as well as the raw synthesizing, are documented in an unpublished English-language working paper (Næss, 2009).

## 3.2 Sustainability as an explicit concept in the investigated plans and policy documents

The concept of sustainable development is articulated in the comprehensive plans of Oslo as well as Akershus (municipal plans and county plans, respectively), especially in the most recent municipal plan of Oslo (2008). Apart from the latter plan, sustainability is only mentioned in the land use parts of these plans. In the two transport infrastructure plans investigated, sustainability is hardly mentioned at all. The same applies to the transportation chapters of the comprehensive plans. This might indicate that the sustainability discourse is more at the forefront among land use planners than among the other groups of planning professionals. The investigated plans also include a Partial county plan for Akershus focusing especially on

environmental issues. In this plan, which also has the status of Regional Agenda 21, sustainability is the key issue.

In the Oslo Municipal plan 2008, sustainable urban development is stated as one of the four main goals, and discussions of the implications of this goal cover 8 of a total of 52 pages of the plan.

Not surprisingly, sustainability is an important issue in the Governmental White Paper on environmental improvement in cities and towns (St.meld. 23, 2001-2002), although the notion itself is not mentioned very often. When referred to, the concept is included as a goal of governmental policies for urban development, coordinated land use and transport planning, cultural heritage protection, and limitation of the amount of transport.

## 3.3 Interpretations of sustainability

The level of reflection on the content of the concept of sustainable development varies much between the different types of plans. Not surprisingly, the most elaborate discussion of this concept is in the Partial County Plan on Environmental Protection adopted by the county of Akershus in 1998. Here, sustainable development is understood in accordance with the Brundtland Commission's coining of the term. In the plan, the environmental dimension is especially highlighted. A social dimension, understood in terms of a globally equitable level of consumption, is also emphasized. Economic growth is not mentioned as a sustainability goal. Rather, growth is taken as a given fact, where the challenge is to minimize or eliminate its negative environmental impacts. Oslo has not adopted any similar plan focusing in particular on Agenda 21 and environmental issues. (Oslo's so-called Green Plan – a partial municipal plan adopted in 1993 - does not mention the concept of sustainable development at all.)

The comprehensive county plan of Akershus (2007) interprets sustainable development as a combined environmental, social and economic concept, emphasizing area-efficient land use, environmentally friendly transport, regional industrial and trade development, and public health.

Oslo's municipal plan for 2004 refers to sustainable urban development in terms of meeting the needs of present inhabitants without jeopardizing the possibilities for future generations to have their needs met. The remaining two investigated municipal plans of Oslo include no definition of sustainable development or any explicit statement about how the concept is being interpreted in the plans. From the ways that the concept is used in all three plans it appears, however, to be primarily considered as an environmental objective.

The Oslo Packages (transport infrastructure plans) include no explicit mentioning of the way the concept of sustainable development is understood. In the single sentence where the concept of sustainability is ever used in one of these plans (in Oslo Package 3), it refers to the promotion of public transport, which is considered an environmentally friendly mode of travel, compared to the private car.

In the Governmental White Paper on better urban environment there is no explicit definition of the concept of sustainable development. However, from the way it is used, it clearly refers to environmental sustainability, with a particular focus on reducing resource consumption, pollution and negative transport-related

environmental consequences, and protecting biodiversity and outdoor recreation opportunities.

Seen together, the investigated plans and policy documents thus interpret sustainability mainly as an environmental challenge and objective, although some of the plans also mention social and economic aspects. Since the needs for commercial, service and residential development are assessed in other parts of the plans, the sections dealing with the goal of sustainable development focus mostly on environmental issues.

## 3.4 Status of sustainability goals

Among the investigated plans, there is a remarkable increase in the prominence of sustainability goals as we move along the timeline. In the most recent plans (Oslo's Municipal Plan of 2008 and Akershus' County Plan of 2007), sustainable development is stated as an (or even the) main goal. In the earlier Oslo plans, sustainability goals are much less prominently expressed. Perhaps needless to say, the Akershus County plan focusing especially on the environment and Regional Agenda 21 has sustainability as its overarching goal, but this is a sector plan which has to be balanced against other sector interests in the final planning and decision-making. In the Oslo Packages, sustainable development is, as already mentioned, hardly mentioned at all, and is therefore obviously not a main goal.

The formulation of sustainability and other goals in the 2004 Municipal Plan of Oslo may serve as an example. The plan includes one or more objective within each of eight different topics of the 'social part' of the plan (chapter 4), and one main goal and eleven partial goals of the 'land use part' of the plan (chapter 5). In the introductory part of the 'land use part' of the plan (chapter 5.1), it is stated that

> *the key land use issue is how the municipality should facilitate to meet the need for development resulting from the expected growth in population and business life. The wish for a sustainable urban development and the principle of a coordinated development of land use and the transport system is superior for all land use planning in the municipality of Oslo.*

In other words, the growth in population and employment is taken as a given fact. The same applies to the needs for construction resulting from this growth. The construction must, however, be carried out in a sustainable way, with a particular emphasis on coordinated land use and transport planning.

Within the 'social part' of the plan, thus, sustainability is one among several goals and has to be balanced against (and maybe subordinated to) the other goals (especially the goal of increasing the city's economic competitiveness). Within the 'land use part' sustainability takes on a more prominent status, given the predefined (in the 'social part') amounts of residential and commercial development.

In both the Akershus county plan of 2007 and the most recent municipal plan of Oslo (2008), environmental, social and economic goals are depicted as forming a synergetic unity rather than being in conflict with each other. This applies regardless of whether (the Akershus plan) or not (the Oslo plan) social and economic aspects are explicitly mentioned as parts of the sustainability concept. In the Akershus plan, the main goal, partial goals and sub-partial goals are apparently all considered to reflect different dimensions of sustainable development. The environmental aspects

of sustainable development will thus be balanced against the economic and social aspects. The economic and social goals are formulated in ways that do not seem to make them inherently conflicting with the environmental goals, but the actual level of conflict will of course depend on the practical interpretation of each partial and sub-partial goal. In the 2008 municipal plan of Oslo, environmental sustainability, to the extent that it is addressed in the plan, is not depicted as conflicting with the city's growth strategies, but rather as supporting these strategies by improving and protecting the environmental qualities of the city, and hence increasing its attractiveness as a place to live and a place in which to invest. A reputation as "Europe's sustainable city" fits well into such a strategy and implies that there may be a scope for addressing environmental challenges beyond a mere local scope (e.g. carbon dioxide reductions) without conflicting with growth objectives.

This emphasis on sustainability as something that goes hand in hand with economic development is also evident in the 2001 governmental white paper on the urban environment. Sustainability is the overarching topic of this document, although the word itself is not defined and not explicitly referred to very often. The document frames environmentally sustainable principles for urban development as something that will also improve the position of cities in the international competition for inward investment and in-migration of high-qualified labor. The document thus 'sells' environmental sustainability as something that will not only benefit future generations, but also contribute to economic growth.

## 3.5 Main sustainability issues addressed

The plans differ somewhat in terms of how directly or indirectly they discuss sustainability problems/issues. In some of the plans, a connection between a certain trait of development and its sustainability consequences is assumed implicitly (e.g. when the Oslo Municipal Plan 2000 mentions the goal of increasing the share of public transport with a reference made to sustainability). In some other plans, the more direct impacts (i. e. environmental impacts) are highlighted. Common for all the plans is that car dependency or its related environmental problems like energy use and air pollution are mentioned. Thus, the plans seem to express a shared opinion that the increasing car traffic represents a major – or even the most important – sustainability issue in the Oslo region. This reflects a similar emphasis in national-government policy documents on urban environmental issues. For example, the Governmental White Paper on better urban environment (St.meld. 23, 2001-2002) highlights the various types of impacts of growing car traffic as a particularly important problem complex that needs to be dealt with in order to obtain sustainable development.

Apart from this, topics such as the protection of natural areas outside and inside existing urban area demarcations, cultural heritage, waste generation, and energy consumption in general (including energy use in buildings) are mentioned in the municipal and county plans. This too is in accordance with priorities in the Governmental white paper and other national policy documents. The transport infrastructure packages do, however, not mention any of the latter sustainability topics. Possible encroachments into landscapes and cultural heritage due to road building are, for example, not mentioned in these documents.

## 3.6 Policy measures to promote a sustainable urban development

In all three municipal plans of Oslo as well as in the county plans of Akershus, a land use strategy based on urban densification and development around public transport nodes is justified by referring to sustainability goals. In addition, the latest municipal plan of Oslo (2008) and the 2007 Akershus county plan include strategies for transport infrastructure development, which are also presented as responses to sustainability challenges. These strategies aim at 'environmentally friendly and efficient' transport systems (including passenger transport as well as goods transport). The 'efficiency' goal may, however, be open for highway extensions, as this is widely believed to be the most relevant way to reduce congestion. In the Akershus county plan (2007), the transport strategy includes a sub-strategy of highway development. This sub-strategy is formulated with quite 'environmentally friendly' phrasing (traffic safety, environmental improvement, better flow for bus traffic and goods transport), but also includes a formulation on 'establishing a capacity balance between the three main transport corridors (west, south and north-east) and the capacity in Oslo). This latter formulation might legitimate road capacity increases in the corridors where the capacity is currently lowest, compared to the demand.

Apart from the main densification and transport strategies, the latest Oslo municipal plan also emphasizes protection and management of cultural heritage and reduction of local environmental nuisances as sustainability challenges, along with the provision of social infrastructure like kindergartens, primary schools, various sports fields, outdoor areas and meeting places, and the facilitation of land supply preparedness and sufficient and diverse housing development. Thus, in this plan, environmental, social as well as economic dimensions of sustainability are referred to, and within the environmental dimension both global and local issues are addressed.

The policy measures of the municipal and county plans express conceptions of what a sustainable urban development entails that are very similar to those expressed in national policy documents such as the Governmental White Paper on better urban development. In the summary of the latter document it is stated that a more sustainable urban development must be secured by long-term urban developmental strategies and a coordinated land use and transport planning, based on the following main principles:

- Public transport should be the backbone of the urban pattern of development
- A strong urban center with a concentration of workplaces, dwellings, shops and cultural facilities
- Concentrated development of housing and workplaces close to public transport nodes
- Local communities with dense and variegated housing, green areas and local facilities, with public transport and daily services within 500 m distance from the dwelling
- Continuous green structure connecting the local communities with each other and with surrounding larger natural areas

- A main network of paths and roads for travel by bike
- Major roads for motorized traffic should be led outside local communities and the city center, but the city center should still be accessible. Area-demanding and car-dependent workplaces should be located to the network of main roads.

The municipal and county plans evidently belong to the same discourse on sustainability and spatial urban development as the Ministry of the Environment. Although it is often not possible to say for sure who has influenced who, there is reason to believe that the content of the municipal and county plans has at least to some extent been inspired by national policy guidelines (and in the case of the National Policy Provisions on coordinated land use and transport planning, national authorities also have the possibility of stopping municipal land use proposals violating these provisions). Having said that, it should also be noted that the municipality of Oslo has for a long time pursued an urban containment policy, and Oslo would probably have employed many of the same urban developmental strategies also in the absence of any ministerial policy provisions.

The two transport infrastructure packages are much less explicit about sustainability. Oslo package 2 does not mention sustainability at all, but its policy measures aim at improving public transport and hereby to reduce the environmental and congestion problems associated with the growing car traffic. In Oslo Package 3, both road development and public transport improvements are promoted, where the latter is mentioned as a contribution to sustainability.

## 3.7 Positions on the compact city model

All the five investigated municipal and county plans clearly support the compact city model. The two transport infrastructure packages do not focus on spatial urban development, but there is nothing in these documents indicating any divergent view on the spatial strategies advocated in the municipal and county plans.

Among 15 main elements of the land use strategy of the Oslo Municipal Plan 2000, seven explicitly support urban densification and two other elements point at the need for cross-border cooperation with the County of Akershus in order to obtain a regional urban structure based on development close to public transport nodes in main infrastructure corridors. These priorities are continued in the two next municipal plans. Oslo's most recent municipal plan (2008) is unambiguously supportive of the compact city model. This support is to a high extent based on sustainability arguments, notably regarding the influence of urban form on travel (less car travel and higher shares of walking, biking and public transport), protection of natural areas and farmland, and utilization of existing infrastructure. A compact urban development is mentioned as favorable not only for the intra-urban travel, but also in order to facilitate the use of public transport to and out of the city. The plan identifies a number of areas for densification and urban transformation, mainly in the central and inner part of the city (including transformation of underutilized harbor areas),

Compared to the previous plan, the land use designation of some urban transformation and densification areas has been changed from "important area for residential development" to "mixed land use". These areas are all located in the central and inner parts of the city.

The land use principles of the 2004 county plan for Akershus (which was re-adopted for two more years in 2007) must be characterized as nearly maximal support of compact city strategy, given the location of Akershus as a county surrounding, but not including the main and central part of the city of Oslo. This applies to patterns of development within each urban settlement and municipality of the county, but also in terms of the distribution of population and job growth between the county of Akershus and the municipality of Oslo. The land use principles appear to be based to a high degree on the Partial County Plan for Environment Protection (Regional Agenda 21) adopted in 1998. Urban densification rather than greenfield development is an overall priority. The plan is based on the Dutch ABC principle for location of workplaces with different mobility profiles. The land use strategy of the plan says that new office workplaces should not be located outside the central parts of the existing urban settlements, and preferentially within walking distance from railroad stations or other important public transport nodes, whereas land-intensive, freight-generating workplaces are to be located close to main transport arteries (road and/or rail). Moreover, it is stated that a larger part of the total residential development in Oslo and Akershus than previously should be located to the municipality of Oslo, i.e. to the most central part of the region.

The strong focus on compact city development in the municipal and county plans is in accordance with national-governmental priorities as expressed in the National Policy Provisions on coordinated land use and transport planning (1993) and the Governmental White Paper on better environment in cities and towns (St.meld. 23, 2001-2002). The latter document depicts the compact city model as clearly favorable based on sustainability and other environmental arguments. The document acknowledges that conflicts may occur between urban densification and local amenities, in particular intra-urban green areas, but sees these conflicts as clearly resolvable. The government thus advocates ‘densification with quality” and calls for a channeling of densification to areas already marked by technical encroachments.

## 3.8 Assumptions about relationships between land use and transport

All the five investigated municipal and county plans make explicit references to causal influences of land use on transport. The same applies to the Governmental White Paper on better urban environment. These statements are in line with state-of the art knowledge about such relationships. For example, Oslo’s municipal plan of 2000 states that urban development based on densification in the inner city and close to public transport nodes will reduce the need for transport, increase the share of travel undertaken by public transport, and encourage increased walking and biking. The county plan of Akershus (2004) points at the fact that workplace location in the peripheral parts of Greater Oslo usually leads to a higher share of car commuters than workplaces located in the inner city, whereas average commuting distances rather tend to increase than decrease. This is presented as a dilemma in the light of the widespread wish among Akershus politicians for a higher number of workplaces within its county borders. Instead of being withheld, denied or raised doubt about, this knowledge is presented explicitly and discussed in the plan, although its policy implications are politically controversial. The latest municipal plan for Oslo (2008) also makes several references to the favorable impacts of the chosen densification strategy, seen from the perspective of reducing car travel. However, in the

background document of the plan, a mathematical transport model forecast of two different land use alternatives is presented; one characterized by a high proportion of workplaces and residences being located to the inner parts of the municipality, and one alternative with a higher proportion of development in the outer parts. This model computation shows smaller differences in traffic growth between the alternatives than what could be expected from empirical studies in Oslo of the influences of residential location and workplace location on travel. The relatively small difference between the model-based forecasts does not, however, appear to have raised any doubts among the planners about the traffic-reducing impact of a concentrated and compact urban development.

In the two transport infrastructure packages, no references are made to causal influences of land use on travel.

## 3.9 Transport policy priorities

All the plans (with the county plan on environmental issues as a possible exception) presuppose, and more or less explicitly support, improvements in public transport as well as road capacity increases. In the Governmental White Paper on better urban environment, the need for more environmentally friendly mobility patterns in cities is highlighted. The government aims to increase the market share of public transport in the urban regions. The need to improve the conditions for bicyclists and pedestrians is highlighted. The document also points to the necessity of local as well as national policy measures to influence choices of travel mode as well as the overall demand for transport. Apart from the general and strong emphasis on the role of land use planning, instruments for influencing travel behavior are, however, not mentioned. These objectives are also reflected in the investigated municipal and county plans.

In the white paper, the government states that it is particularly important to improve public transport where this can contribute significantly to reduce congestion and environmental problems. The focus on congestion is also strong in the other investigated plans. Reducing the friction of distance thus seems to be a widely shared objective. Reducing travel time between given destinations appears to be a common goal that even the Akershus County plan for environmental protection endorses. In the latter plan, such travel time reduction is supposed to be obtained by public transport investments and also as a result of road improvements, as ‘increased flow on the road network is to bring benefits first and foremost to public transport and commercial freight’. This may imply that road capacity increases are taken for granted even in the County plan for environmental protection, although improved flow can also result from reduced traffic volumes within existing road capacity, obtained through road pricing.

In all the other six investigated plans the combined investments in road development and public transport (with additional funding for operation of transit services) is supported. In some of the plans, still (notably the County plan of Akershus (2004)), the support of road capacity increases is rhetorically somewhat downplayed. In Oslo’s latest municipal plan (2008), new road tunnels are advocated in order to protect local environments from air pollution and noise.

Although the “predict and provide” paradigm for road capacity increases has been formally left in Norwegian national-government transport policy since the 2001 National Transport Plan (and to some extent already since the 1993 National Policy

Provisions on coordinated land use and transport planning), meeting projected traffic growth is still used as a (partial) argument for more road building. For example, in Oslo's most recent Municipal plan (2008), it is stated that "the road network must be designed and maintained in order to meet anticipated traffic growth in as environmentally friendly and safe a way as possible".

Interestingly, the Governmental White Paper on better urban environment avoids saying anything explicit about whether or not road capacity increases in urban areas is a good idea. The document points to the fact that transport-reducing land use planning, improved public transport and better bike paths can make road capacity increases unnecessary. The document does, however, not actively advice against road construction in urban areas. This may reflect diverging opinions between the Ministry of the Environment and the Ministry of Transport, where the Ministry of the Environment is allowed to express its support of 'soft' transport policy measures but not to publicly oppose road construction as a strategy in urban areas.

## 3.10 Assumptions about influences of transport infrastructure investments on travel

Most of the plans mention public transport improvement as a measure to make transportation more environmentally friendly. Implicitly (and in some plans also explicitly) this reflects a belief that improved public transport will reduce the growth in car traffic. However, except the Akershus county plan for environment protection, none of the plans mention the traffic-generating effect of road capacity increases in congested areas. Admittedly, an Oslo Package 3 document seems to assume any causal link between increased road capacity and more road traffic. This is evident from the statement that "the Steering Committee recognizes that a full effect of the development of the new western motorway (E18) presupposes substantial improvement of public transport in order to avoid that the E18 will generate new car traffic". Apart from this statement there is no explicit or implicit mentioning in the Oslo Package 3 indicating any such influence. Rather, growth in car traffic is seen as an exogenous and "natural" trait of development following more or less automatically from economic growth and growth in car ownership (where the latter too seems to be considered as something beyond the range of influence from transport policies and land use policies or other public regulations).

In the remaining plans (except the Akershus County plan on Environment Protection), no mentioning of any such effects (nor any denial of these effects) are made. Instead, the plans express the view that reduced congestion and a higher share of public transport can be achieved through combined investments in increased road capacity and improvements of the public transport services. Thus, rather than denying the traffic-generating impact of increased road capacity, the plans make this a non-issue. The same applies to the Governmental White Paper on better environment in cities and towns, where there are no references to any causal influences of transport infrastructure investments on travel behavior.

## 3.11 Spatial content of urban development discussed without referring to sustainability

Apart from the Akershus County plan on Environmental Protection, which is a non-binding sector plan that has not been subject to tradeoff against the goals and measures of other sectors, all plans include some policy measures that are not discussed in relation to sustainability challenges. Notably, this applies to the construction of new buildings and road development increasing the road capacity. All three investigated municipal plans for Oslo imply increased road development, but the environmental impacts of this are not discussed. The same applies to the comprehensive Akershus County Plan (2004). The Governmental White Paper on better environment in cities and towns also avoids discussing the role of urban road capacity increases in inducing traffic growth. In the municipal and county plans (except the environment partial plan of Akershus), the planned construction of buildings (residences, workplaces and social infrastructure) appears to be based purely on considerations of market demand, where population growth makes up one component of the demand for more buildings and road space, and increased consumption per capita (of residential floor space, workplace area and road space) makes up the other main component. Both components seem to be taken as exogenous factors that cannot be influenced by planning and policy-making but just need to be facilitated. Their consequences in terms of environmental sustainability are not being discussed in the plans.

## 3.12 Barriers to a sustainable urban development

The investigated municipal and county plans mention barriers to a sustainable urban development only to a small extent, and some of these plans do not point to any barriers at all. The most recent municipal plan of Oslo (2008) makes reference to an objection from the National Coastal Agency against commercial and residential development on old harbor areas close to the city center. This development makes up a key element in the densification strategy, and without it, the workplaces and residences in question will have to be located elsewhere, most likely with loss of natural and/or agricultural areas and more car travel as a result. The objection will be decided on by the Ministry of the Environment, probably in the fall of 2009, and possibly the objection would not turn out to be any barrier in practice. The Akershus partial county plan for environmental protection (1998) mentions that complicated ownership conditions and the need to take neighborhood conditions into consideration often makes it more difficult for public authorities to manage the progress of densification than for greenfield development. This is also mentioned as an obstacle in the Governmental White Paper on better environment in cities and towns. In the latter document it is also pointed at the fact that projects that are clearly economically favorable for society are not always considered profitable, seen from the perspective of an individual developer. This may put the local environmental qualities of the project under pressure.

The Akershus comprehensive county plan (2004) highlights that the willingness of municipalities to follow the national government priorities in land use policy (urban densification and development close to public transport nodes) may be threatened if the state fails to realize its promise to fund public transport improvements. The presentation of this as a barrier may, however, perhaps be tactically motivated rather

than reflecting a real risk that the municipalities will prefer a more sprawling development if national-governmental public transport funding turns out to be lower than presupposed.

In the two investigated Oslo Packages, the need to maintain the delicate consensus achieved is mentioned as a barrier against trying to change the priorities of the Packages in any direction. As for the road-oriented Oslo Package 3, this is indicated by the following sentence in a letter from the Steering Committee of the Oslo Package 3 to the Ministry of Transport, dated March 31, 2006: "The group therefore warns against proposing significant changes, since this may lead to the withdrawal of the support to the package as a whole from one or more of the mentioned parties."

## 3.13 Growth – an assumed good?

All the investigated plans – apart from the Oslo Package 2, which does not mention the issue – assume higher population growth in Oslo and Akershus than the national average. Except the Akershus partial county plan for environment protection, the plans do not discuss the growth as an environmental issue. It is rather conceived as a 'natural' trend, where forecasts for the future are based on experienced growth rates in recent years. None of the plans signal any aims neither to reduce nor increase the growth. The forecasted growth is not exaggerated – on the contrary, the actual population growth in Oslo turned out to be considerably higher than what was forecasted in the municipal plans adopted in 2000 and 2004. Moreover, the Akershus county plan does not aim to channel as high as possible a share of the total population growth in Oslo and Akershus within its own county borders. On the contrary, the population forecast implied a lower proportion of the growth in Akershus and a higher proportion in Oslo than in recent years.

In the oldest among the investigated municipal plans for Oslo, population growth is described as economically desirable because it improves the relationship between income and expenses in the operation of the municipality. Any such statements are absent in the later plans – maybe because in the meanwhile population growth had increased so that there was no longer any such imbalance between income and expenses?

Growth in the building stock is depicted in the plans to follow from the forecasted population growth. There is no mentioning in the plans of increased floor area per capita as a component of the growth in the building stock. This might seem strange, but after decades of rapid growth, the residential floor space per inhabitant in Oslo hardly increased at all during the late 1990s and the first years of the 21st century, but was rather somewhat reduced. This may explain why per capita growth in housing consumption is not addressed in the investigated plans.

The Akershus partial county plan for environmental protection represents an exception in that the doubling of residential floor space per inhabitant in Norway between 1960 and 1996 is commented on. The plan holds that the effects of more environmentally friendly technologies and increased environmental awareness have generally and largely been outweighed by increasing consumption levels. The plan places the responsibility for pursuing policies to make consumption patterns generally more sustainable on the Ministry of Finance.

Being a national-government policy document, the Governmental White Paper on better environment in cities and towns does not say anything specific about growth in

particular metropolitan or urban areas. It is, however, evident that the document is generally positive to economic growth and also to the growth in building stock it entails. The challenge is thus to accommodate this growth in an environmentally friendly way. Urban population growth is mentioned as a given fact, but is not being problematized.

## 3.14 Measures for implementation

In the municipality of Oslo, a partial municipal plan for the forest areas surrounding Oslo ("Marka") implies a strict prohibition against urban development as well as scattered construction of houses within the demarcated Marka areas. According to the Norwegian planning legislation, it is forbidden to establish buildings and technical infrastructure (except for agricultural purposes) in areas set aside for non-development in the municipal master land use plan (i.e. the combined land use category of agricultural, natural and outdoor recreation areas). By hindering urban expansion into the surrounding forests, the partial municipal plan for Marka is an effective instrument forcing urban development within the municipality to take place as densification. The limited possibilities for urban expansion thus ensured have increased the motivation of developers for embarking on brownfield transformation projects.

Admittedly, the Marka border in Oslo might also push development from Oslo to the surrounding municipalities. This does, however, not seem to have happened to any high extent during recent years, perhaps because the surrounding municipalities have also adopted their Marka borders, yet often with considerable scope for greenfield development between existing urban areas and these borders. Apart from the Marka border, the land use parts of the Oslo municipal plans are strategic plans without any legal instruments for implementation. Within the zone set aside for development, the Oslo master plans are thus more flexible, leaving considerable room for negotiation between the municipal authorities and developers about the content and design of development on specific sites. The detailed land use on the 'urban' side of the Marka border will be determined through legally binding local development plans.

The land use strategies of the County plans for Akershus are not legally binding but may form the base for formal objections against municipal plans violating the principles of the county plan strategies.

In the transport infrastructure packages, the public transport instruments are linked with negotiated funding sources: State money which would be used several years later in the absence of the Oslo Package 3, fees from a toll ring in Oslo and a new toll on the Western highway, and an extra fee on public transport fares introduced in Oslo Package 2. This allocation of funding makes up a strong link between the Packages and their implementation. In addition to that, the Packages depend on formal land use plans for the various rail lines and roads, station areas to be reconstructed, etc. But as the partners of the coordinator groups are also the main responsible actors for preparing and adopting these plans, the possibilities for implementing the agreed-on Packages must be considered good.

The Akershus partial county plan for environment protection includes few, if any, direct implementation measures. For each of the various strategies mentioned, responsible agents are identified. In some cases the responsible agent is the county itself, but in several cases the county is responsible together with other authorities

like national transport authorities, the ministry of the environment, or municipalities. In these cases, the county has to negotiate with the co-responsible authorities, and the implementation thus relies on their approval. Moreover, for some of the strategies, the entire responsibility is outside the county.

The Governmental White Paper on better environment in cities and towns also includes few direct implementation measures. The recommended land use strategies are not legally binding but may form the base for formal objections against municipal plans violating these principles. The strategies are also generally in line with the National policy provisions on coordinated land use and transport planning, which were adopted eight years earlier. These policy provisions can also be used as a basis for formal objections against recalcitrant municipal plans.

## 3.15 Institutional frameworks

The municipal plans of Oslo focus a good deal on horizontal coordination between the municipality of Oslo and the neighboring municipalities, which is considered to be presently not good enough. For example, the 2008 Municipal Plan mentions the challenges due to the fact that the functional city of Oslo is spread over a number of different municipalities. The plan refers to statements by the municipality of Oslo in dialog with the Ministry of Municipalities and Regions arguing for establishing a separate regional body in order to ensure a greater regional influence of the development especially related to land use and transport coordination. Implicitly, the municipality of Oslo could maybe also be said to call for a stronger vertical coordination, as the spatial planning of Oslo is (at least in the view of the municipality) in line with the national provisions the Ministry of the Environment on coordinated land use and transport planning, whereas the neighboring municipalities maybe adhere to these policy provisions to a lesser degree. A regional decision-making body might be an instrument to force the "non-obedient" municipalities to follow national land use policies to a higher extent.

In the 2000 Municipal plan for Oslo, reference is made to on-going initiatives in cooperation between the municipality of Oslo, the county of Akershus and the national government to implement an intensified development of public transport infrastructure and road development. This cooperation was later to result in Oslo Package 2.

Whereas the municipal plans of Oslo focus on horizontal coordination across spatial territories, the county plan of Akershus especially addresses lack of horizontal coordination between sectors (between land use policy and public transport policy at national-state level), but a need for better coordination between the municipality of Oslo and the county of Akershus is also mentioned.

The need for better coordination between state-level sectoral interests in urban development is also addressed in the Governmental White Paper on better urban environment. The document is, however, not very specific on the need for reform of the frameworks for planning and decision-making, and refers instead to the on-going work of a committee elucidating needs for improvements in the Norwegian planning legislation.

The two transport infrastructure packages are themselves the outcome of negotiations between key stakeholders in the road sector and in the public transport sector, and at national, county and municipal level. Such cooperation has been promoted in a

Governmental White Paper and made subject to discussion between the various parties represented in the Parliament. Elected officials in the Municipality of Oslo and the County of Akershus have also been strongly involved in the processes. The Packages are thus the result of coordination processes horizontally as well as vertically, yet limited to various actors within the transportation sector. The Packages do, however, not seem to have involved horizontal coordination with e.g. different land use and urban developmental interests. (Such coordination is still aimed at, and to some extent ensured, by other measures, among others the National Policy Provisions on Coordinated Land Use and Transport Planning.)

It should also be noted that the Office of the Auditor General in Norway (2006) has criticized the work on Oslo Package 2 for a too low level of coordination between different sectors and levels of administration. According to the Office of the Auditor General, this has hampered the efficient and holistic use of instruments to reach the goals on which the initiation of Oslo Package 2 were justified, namely increased the market share of the public transport and sustainable mobility.

A similar criticism could be raised against the Oslo Package 3, where the quite massive investments in road development are likely to undermine the Package's stated goal of increasing the market share of public transport. On the other hand, the steering committee of Oslo Package 3 has launched a proposal for a new, indirectly elected body for decision-making within the transport sector at a regional scale (also mentioned in the 2008 Oslo Municipal Plan, cf. above). This will facilitate a continuation of the territorial coordination obtained through the work on the Oslo Package 3, but may loosen the vertical coordination as it will probably reduce the influence of national government influence on regional-level policies. It is also uncertain whether such a solution will contribute to better coordination between sectors (e.g. between land use and transport planning).

The plans generally do not say much about the roles of civil society and cultural conditions. A possible exception is the 2008 Municipal Plan for Oslo, which includes text on democracy, citizen involvement and cultural conditions, especially in the context of the strong growth in immigrant population. This plan also mentions so-called charrettes as a tool for increasing citizen participation. Such charrettes imply cooperation between professionals, interest organizations and affected parties through an intensive cooperative development of design proposals.

## 3.16 Proposals for institutional changes

The Akershus partial county plan for environment protection (1998) proposes to develop an existing so-called Plan Forum further as an arena for dialog between the county, the municipalities and regional state authorities about land use and patterns of development.

The Akershus County Plan 2004 and the simultaneous Oslo Municipal Plan 2004 lay the ground for the establishment of the Oslo Package 3 cooperation between the municipality of Oslo, the county of Akershus and the Ministry of Transport.

As a part of the Oslo Package 3 documents, the steering committee of this plan proposes to establish a new, indirectly elected decision-making body at a regional scale. This proposal is referred to and backed by the Oslo Municipal Plan 2008.

The remaining investigated plans do not include any proposals for changes in institutional frameworks. However, from the proposals mentioned above it is evident that both the County of Akershus and the Municipality of Oslo consider that there is a need for better horizontal coordination between different geographical territories as well as vertical coordination between the State and the counties of Akershus and Oslo. (The municipality of Oslo also has the status as a county).

## 3.17 The role of economic driving forces

The challenges presented to the prosperity of cities by economic globalization seem to be addressed in national-government policy documents before appearing in the investigated municipal and county plans as an important topic. In the Governmental White Paper on better environment in cities and towns it is stated (chapter 3.2) that different countries, cities and individuals are increasingly influenced by the same economic, political and cultural traits of development. Increasing globalizations implies, it is said, increasingly strong competition between cities in order to attract businesses that can contribute to investments, workplaces and added value. The government therefore considers it "an important task of urban policy as well as trade and business policy to make the nation attractive for an innovative and value-creating business life." The document refers in this connection to the increased emphasis in many European countries on long-term strategic planning aiming to promote cities' competitive power end economic development in general. The White Paper does not discuss this quest for competitiveness as something that might put the environment under pressure. On the contrary, a good 'environmental profile' is emphasized as something that will increasingly become a competitive advantage of cities as well as for individual companies. The document thus frames the relationship between economic growth and environmental impacts in clear accordance with the perspective of ecological modernization.

In the earlier among the investigated municipal and county plans, there is little or no mentioning of economic, structural driving forces of urban development. For example, in the Oslo Municipal Plan 2000, there is no mentioning of any economic driving forces of urban development, in spite of the fact that economy is one of the two main themes of the plan (along with land use). The discussion of economic issues is entirely focusing on strategies to make the use of municipal budgets more effective and targeted. There is not any mentioning of strategies for attracting inward investments or improving/maintaining the city's competitive power in a globalized economy. Maybe this is partly a result of the fact that the plan was made in a period when there was already a considerable growth in employment and population. The need for attracting external capital was therefore maybe not conceived of as crucial. But on the other hand, the growth was even higher when the most recent plans were made, and in these plans the goal of improving the competitive power (of the region or the municipality) has become more prominent.

The Oslo Municipal Plan 2008 points at trade clusters, attractive location opportunities, good living conditions, cultural life, and an attractive urban environment as important features in order to improve the city's competitive power. Implicitly, this is about structural dynamics of the globalized market economy. However, the plan does not state explicitly whether or not these challenges contribute to shape urban development in a different direction than what would have been the

case if the provision of employment did not depend on the city's position in the global competition for investments.

Apparently, given that the demand for growth in commercial, residential and service buildings is to be facilitated, the municipality does not consider that there are any conflicts between the goal of competitiveness and the goal of urban sustainable development (and the densification strategy for obtaining this goal). This is in line with a statement of the Akershus County Plan 2004 that there has been high demand among the agents of the property market in the 1990s for centrally located areas for residential and workplace development. Evidently, this demand has continued in the new millennium.

In the Oslo Package 3, improving the competitive power of the region is mentioned as a key rationale for its policy of ensuring 'a good traffic flow for the transportation carried out by business life'. Here, competition for growth is clearly tied to policies to enhance mobility (with road building as well as public transport improvement as preferred measures). Any conflicts between growth-oriented transport policy and environmental sustainability are, however, not discussed.

The Akershus partial county plan for environment protection (1998) mentions briefly that environmental problems are closely tied to the choices we make as consumers, but does neither mention the role of steadily rising consumption levels as a part of the economic system nor the role of advertising in influencing consumption choices.

# 4 The discourse on sustainable urban development in the professional journal *Plan*

## 4.1 Introduction

This chapter presents a synthesizing analysis of a number of articles in the journal *Plan* that may throw light on the Norwegian professional discourse on sustainable urban development in the fields of land use and transport infrastructure. The synthesizing analysis is based on short (usually one third to a half page each) analyses of the individual papers investigated. The presentation below is structured around 14 detailed research questions. For the majority of these questions, the focus of the analysis is limited to the frequency by which different views are expressed or topics dealt with, possibly with some assessment of changes over time. For a few of the research questions, we go deeper into the material by referring more in detail the messages and opinions expressed by various participants in the debates. Such more in-depth accounts are given for the following issues:

- the existence and importance of relationships between land use and travel
- standpoints in favor of or against the compact city model
- standpoints to transport infrastructure priorities
- barriers to sustainable development
- whether growth in the building stock is being questioned
- the influence of institutional frameworks in promoting or counteracting a sustainable urban development
- the role of structural economic forces.

The reason for going deeper into these particular issues than for the remaining issues is partly that some of these issues have been subject to more contestation and debate than the remaining issues. In addition, we have chosen to look more in detail into the arguments of the authors covering some issues that may, apart from the contributions of these few authors, be considered 'blind spots' in the sustainability debate among Norwegian planners.

The investigated articles cover the period from 1994 to the spring of 2007. Among the total number of published articles, only those dealing with relevant issues (i.e. urban land use and/or transport infrastructure planning, sustainable development and/or the combination of these topics) were included in the analysis. Among a total number of some 1000 articles published in the journal during the period, 101 were selected for further inspection. These articles are fairly evenly distributed over the period, with 48 from the years 1994 – 1999 and 53 from the period 2000 – 2007.

Each article was first analyzed, using a common checklist. These interpretations of individual articles are documented in two unpublished Norwegian-language working papers (Næss, 2008b and Strand, 2008).

## 4.2 Sustainability as an explicit concept in sustainability-relevant articles

As mentioned above, only articles dealing with urban land use and/or transport infrastructure planning, sustainable development and/or the combination of these topics) were included in the analysis. Nearly one half of the investigated articles address the issue of sustainable development in one way or another, yet with considerable variation in the depth of this discussion. The proportion of articles mentioning sustainability has been quite stable over the whole period. The articles not mentioning sustainability often also deal with issues of a high relevance to sustainable urban development. The fact that an article does not mention sustainability explicitly usually does not imply that the author is ignorant about or indifferent to sustainability challenges. Actually, some of the articles not mentioning sustainability deal with topics that have been put high on the agenda as a result of the sustainability discourse. Examples of such articles are articles presenting research results about influences of land use patterns on travel, or articles criticizing the mismatch between adopted road building schemes and transport policy objectives of increasing the modal share of public transport and reducing the share of car travel. In these cases, the sustainability challenges form an implicit background of the articles. Some articles refer, for example, to the National Policy Provisions on coordinated land use and transport planning, yet without mentioning the concept of sustainable development. These provisions were to a high extent adopted as a result of the sustainability agenda, notably the increased focus on greenhouse gas emissions from car traffic. Yet, there are also several articles discussing urban developmental issues without relating to sustainability challenges.

The frequency of addressing sustainable development has remained quite stable during the investigated period, with virtually no difference between the periods before and after 2000.

## 4.3 Interpretations of the concept of sustainable development

Among the 45 articles referring to the concept of sustainable development, two out of five do not specify or concretize the concept. Among the remaining 27 articles, sixteen refer mainly or solely to the environmental/ecological dimension, whereas 11 articles refer to a combination of environmental, social and/or economic aspects. The economic aspect is understood as being about efficient use of resources. None of the articles refers to the economic dimension of sustainability as being about improving the economic competitive power of the local city or local region.

The predominant interpretation of sustainable development as being first and foremost an environmental challenge does not necessarily mean that social aspects are disregarded. This interpretation may, however, reflect a stronger emphasis on the social distribution of burden and benefits between rich and poor countries than on the domestic social distributional issues. Within such a view, significantly reducing the ‘ecological footprints’ of the inhabitants of rich countries, e.g. in term of greenhouse

gas emissions per capita, is important in order to allow for economic growth and rising material standards in poor countries without bringing the total global environmental load above defensible levels. The World Commission on Environment and Development (the Brundtland Commission) itself attaches a strong emphasis on this way of thinking, in particular in the energy chapter (chapter 7).

Whether the authors focus on environmental sustainability or on a combination of environmental, social and/or economic dimensions does not appear to depend on the substantive spatial issues addressed. Yet, there is a weak over-representation of combined sustainability concepts among the articles focusing on sustainable mobility.

## 4.4 Aspects of urban development dealt with

Most of the articles dealing with sustainable urban development have their main focus on the spatial content. (This is also the case – even to a slightly higher extent – among the articles that do not mention sustainability explicitly.) Comparable much fewer of the articles mentioning sustainable development have their main focus on policy measures, the influence of actors, or institutional frameworks. However, about one out of four articles dealing with sustainability have a combined focus. Usually, these articles deal with the spatial content but also with the conditions for implementing a desired land use and infrastructure. Interestingly, such a combined focus is more common among articles addressing sustainability than among the articles not mentioning sustainable development. This may reflect – in line with the interdisciplinary nature of the concept of sustainable development – a more holistic approach among those authors discussing urban development in a sustainability context.

There has also been an increase over time in the frequency of articles combining a focus on the spatial content with a focus on implementation conditions, as only three out of 48 investigated articles from the period before 2000 had such a focus, compared to 13 out of 53 in the period from 2000 – 2007.

## 4.5 Geographical scale

A clear majority (about two thirds) of the investigated articles have the city or the metropolitan area as their geographical level of attention. Nearly one fourth of the papers focus on the local (neighborhood/urban district) scale, whereas only one out of ten deals with the regional distribution of population and growth between cities, towns and rural areas. Articles focusing on the local area have become more common in the more recent part of the period than before 2000, whereas the frequencies of city-level and regional-level articles have both decreased slightly. Articles focusing on the city/metropolitan scale still make up a clear majority also in the period after 2000.

## 4.6 Focus of spatial content

To a high extent, the articles dealing in one way or another with the spatial content of sustainable urban development focus on a combination of spatial issues, i.e. several spatial aspects in the same article. Nearly one half of the articles explicitly mentioning sustainability deal with such a combination of spatial features, e.g., the

building stock, the urban green structure and the transport infrastructure. In comparison, only one sixth of the articles not mentioning sustainability have such a combined focus. The sustainable development agenda thus clearly seems to have encouraged a more holistic perspective on urban development among the authors of *Plan* articles. This is especially so when also taking into consideration the more frequent discussion of the spatial content in combination with implementation conditions among articles mentioning sustainability than among those not mentioning sustainability, cf. above.

Among articles dealing with only one spatial aspect, the building stock is most frequently focused on. This applies among articles explicitly mentioning sustainability as well as among those articles in which sustainable development is not referred to. Interestingly, articles dealing with transport infrastructure as the sole spatial topic are much less common within the group addressing sustainability than in the group where sustainability is not mentioned. Or to put it differently: although nearly half of all the investigated articles explicitly refer to the concept of sustainable development, this is the case among less than one fourth of the articles dealing with transport infrastructure as the single spatial aspect. Apparently, the sustainability agenda has penetrated the discourse among transportation planners and researchers to a lesser extent than among land use planners and urban designers. At least, rhetoric of sustainability are less common within the transportation planning and research segment. This difference seems to have remained fairly constant during the whole investigated period.

## 4.7 Main issues identified as responses to the challenge of sustainable urban development

Among the 45 articles in which the concept of sustainable development is addressed, fifteen focus on a combination of challenges (e.g. on sustainable mobility, save nature as well as urban green structure). Thirteen articles referring to sustainability have sustainable mobility as their main or only focus. (In addition, three articles not mentioning sustainability explicitly focus on challenges that are central to the sustainable mobility agenda.) Eight articles have a rather unclear focus as regards substantive sustainability challenges. Three articles address urban green structures, mainly from the point of view of outdoor recreation, health, landscape qualities, and the urban-specific contribution to biodiversity. Only two articles focus on "urban metabolism" with the countryside and/or closed loops of substances. Nor is this issue, which has attracted quite some attraction in the sustainability debate among planners in Denmark and Sweden, addressed in the articles with a combined perspective on spatial sustainability topics. Four articles focus on other topics, among these three identifying the rising material consumption level in Norway and other rich countries as a major sustainability problem.

There have been some changes over time in the frequency by which different sustainability challenges in spatial policy have been addressed. While the topic of sustainability has been addressed about equally often before and after 2000, a combined focus on sustainability topics (notably sustainable mobility, saving nature and urban green structure) has become more prominent after 2000. On the other hand, articles focusing only on green structure or closed loops/urban metabolism occur only in the 1990s. In particular, the focus on closed loops seems to have

disappeared in recent years, as this perspective is not a part of the focus of the articles addressing several spatial sustainability challenges in combination.

## 4.8 Relationships between land use and transport as an issue

Although relationships between land use and travel make up an important part of the premises for the arguments put forth by many of the authors, most articles do not have such relationships as their core focus. One sixth of the articles explicitly deal with relationships between land use and transport. Some of the authors of these articles present their own studies demonstrating such relationships, and several other authors present studies and research results carried out by other researchers, also showing the influence of land use on transport. Among the 19 articles focusing explicitly on relationships between land use and transport, 14 thus demonstrate or refer to the existence of such relationships. Most of the authors also consider these relationships as important in the context of sustainable urban land use planning, although a few authors consider the possibility of influencing travel behavior through land use planning as modest, compared to other policy measures. On the other hand, four articles raise doubt about the existence of relationships between land use and transport. Finally, one article compares transportation energy use in rural and urban areas, but seems to infer from a moderate energy use for transport among rural dwellers that urban densification will not lead to less energy use compared to low-density urban sprawl.

The articles focusing on relationships between land use and travel appear equally frequent in the 1990s and after 2000, with peaks in the professional debate in the periods 1995-1997 and 2003-2005.

Among the 14 articles demonstrating or referring explicitly to the existence of relationships between land use and travel, eight articles present research studies carried out by the authors themselves. A few researchers are involved as authors of several of these articles. Næss (1995) presents results from studies in Norway and other Nordic countries showing clear transport-reducing and energy-saving gains in dense cities and inner-city residential and workplace locations, compared to low-density cities and suburban locations. In a later article Næss & Strand (1997) emphasize that the amount of travel and the travel modes chosen depend on the location of residences and workplaces. They refer research results showing that the amount of (motorized) travel increases with increasing distance from city centers only up to a certain threshold. In rural areas outside the main commuting areas of cities, the amounts of travel are often lower than in the suburbs of large cities. Næss (2004) discusses the relationships between land use and transport with a focus on epistemological issues and the causal mechanisms by which residential location influences travel behavior. In a follow-up article, Næss (2005) presents the results of a comprehensive study of residential location and travel in Copenhagen Metropolitan area. Based on a combination of qualitative and quantitative methods this study shows a clear tendency of longer travel distances, more car travel and less biking and walking among outer-area residents than among their inner-city counterparts. Holden (2002) presents results of studies in Oslo of relationships between residential location and travel. His results are consistent with the above-mentioned empirical studies presented by Næss and other researchers in other *Plan* articles. In addition to showing the merits of inner-city living in terms of less motorized travel in general

and less car usage especially, Holden discusses the possibility that persons who manage on a small amount of daily-life travel will compensate for this in the form of longer leisure trips by airplane. In a follow-up article, Norland & Holden (2005) presents results of an elaboration of the study presented by Holden (2002). Duun (1996) presents a study he has carried out of relationships between land use and travel in Bergen. This study demonstrates the existence of these relationships, but Duun still considers the differences in the amount of car travel between a densification strategy and more decentralized developmental pattern to be relatively modest. Engebretsen (2005) presents recent studies he has carried out of relationships between land use and travel in Norwegian cities, notably Oslo, Bergen and Trondheim. These investigations show considerably shorter motorized traveling distances and substantially lower proportions of trips carried out by car among inner-city dwellers than among their suburban counterparts. Finally, Hidle & Nesje (2006) refer to a (rather simplistic) study they have carried out on trips between the core municipality and other municipalities in each of five Norwegian urban regions. The article does not in itself provide solid evidence for relationships between land use and travel, but the results are consistent with the results of other, more in-depth studies.

The above-mentioned large number of research articles show that there has been a large number of researchers who independently of each other have carried out studies of relationships between land use and travel and published their findings in (among others) the journal *Plan*. The readers of this journal have therefore had access to first-hand information about research into land use-travel relationships covering a Nordic context. The large number of studies presented also shows that this research topic has been considered important in the Norwegian professional debate among planners.

In addition to the articles written by authors presenting their own research, a number of other articles refer to influences of land use on travel and emphasize the importance of such influences (Berntsen, 1994; Jacobsen, 1994; Bjerga, 1996; Fredriksen, 1996; Næss & Strand, 1997; Høyer, 2005). The contents of these articles are to a high extent consistent with the conclusions of the above-mentioned research articles and sometimes elaborate on other related topics as well. For example, Bjerga (1996) presents and promotes the Dutch ABC principles for environmentally sound location of different categories of workplaces. These principles are based on research into how travel modes for trips to workplaces and service facilities vary with their locations. Næss & Strand (1997) refer research results showing that the amount of travel increases with increasing distance from city centers only up to a certain threshold. In rural areas outside the main commuting areas of cities, the inhabitants often travel less than in the suburbs of large cities (also indicated by Kyllingstad (1997).

Whereas the number of articles demonstrating or referring to studies showing influences of land use on travel may seem overwhelming, there are also a few articles denying or attempting to raise doubt about these articles. Skjeggedal (1996b) holds that it is uncertain whether dense and concentrated urban development will reduce the amount of transport, but does not provide any theoretical reasons or empirical evidence substantiating this claim. Seven years later, Skjeggedal et al. (2003) claim that urban densification may result in shorter distances between facilities and a reduced amount of transport but may just as well lead to the opposite. They base this partly on a study in the small town of Steinkjer, where many of those who moved into new inner-city apartments were pensioners who would anyway not travel much

in daily life. They also refer to a study in another small Norwegian town (Førde, pop. 10.000) in which no clear relationship between travel behavior and the distance from the dwelling to the town center was found. However, apart from Holden's (2002) study in Oslo, they omit to mention the numerous empirical studies that have shown such relationships and instead refer to model simulations carried out as part of a Norwegian study in 1991 as their main example of research showing influence of land use on travel. Djup (2005) apparently accepts that urban land use influences travel behavior, but still attempts to raise doubt about some of the findings, in particular the influence of density. He refers to a study of energy use for transport in 22 Nordic cities (cf. Næss, 1995) and shows that if you selected five of the 22 cities you would not find any correlation between urban density and energy use among these five cities. Kyllingstad (2005) too is skeptical about the relationship between compact cities and a low amount of motorized travel. He quotes from an earlier article casting doubt about such relationships, but does not mention any other sources than this single one, supplemented by 'personal observations'. The latter include inner-city residents making long leisure trips that reduce the relative importance of and may even counterweigh any gains in the form of shorter daily trips.

The 'land use-travel skeptics' clearly make up a minority discourse in the Norwegian debate. Although they are represented in about one fourth of the total number of articles dealing with these issues, their coverage of relationships (or non-relationships) between land use and travel is less extensive than in most of the articles demonstrating or referring in a confirming way to such relationships. This is partly due to the fact that 'land use-travel skepticism' often makes up only a part of the issues addressed in these authors' articles. Judged from our interview material and reading of planning documents, their attempts to raise doubt about the influences of urban structures on travel do not seem to have exerted much influence on the opinions and assumptions among planners and policy-makers. The issue of compensatory flights and other leisure travel is, however, less settled. Yet, this uncertainty does not seem to have influenced the discourse about the policy implications of land use-travel relationships to any extent worth mentioning. Apparently, most participants consider that any such tendencies could be countered in more efficient ways than by creating urban structures requiring more daily-life motorized travel.

## 4.9 Positions on the compact city model

Among the 79 articles dealing with the spatial content of urban development, 23 do not express any standpoint for or against the compact city model. Among the remaining 56 articles, 35 support this model without expressing any reservations, whereas 11 are supportive only with some reservations. Seven articles are clearly skeptical or in outright opposition to the compact city model, whereas three articles maintain that this model is at least not applicable in all parts of the country.

Among the articles supporting the compact city model, one half refer to sustainability arguments whereas the other half does not mention sustainability. Interestingly, the shares of these two groups have changed substantially from the 1990s to after 2000. In the 1990s, eleven out of fourteen articles supporting the compact city model without reservations referred to sustainability arguments. Among the articles supporting the compact city model without reservations published 2000 or later, sustainability was mentioned in only seven out of 21. What can be the reasons for

this? Immediately, one might imagine that the change reflects a waning professional emphasis on sustainability after 2000, compared to the 1990s. This does however not fit with the general observation that sustainable development is addressed equally frequently before and after 2000 among the whole selection of investigated articles. Another possible explanation might be that the merits of the compact city in a sustainability context has become so widely recognized that it has no longer been considered necessary to refer to sustainability when arguing in favor of urban densification. Instead, a number of authors have addressed some of the topics where the merits of the compact city have been contested, for example whether or not urban densification leads to less car travel and transport energy use than does urban sprawl. These authors may have considered it needless to mention the sustainability merits of a less car-dependent and less energy consuming city. A third possible explanation may be that changes towards more 'urban" cultural preferences, in combination with a changing household structure (more single people and fewer families with children), have changed residential preferences toward inner-city apartments rather than suburban single-family homes. Thus, sociological and lifestyle-based arguments for compact cities have become increasingly common. A shift in architectural ideals toward high-rise and hi-tech buildings may also be part of the pattern.

In summary, compact city development appears to have become consolidated rather than weakened during the most recent part of the investigated period. In the current debate, the reservations are more about the way in which densification is carried out, with some authors criticizing the largely market-led inner-city development for resulting in too small apartments, lack of green outdoor areas, and generally poor living conditions for children.

Among the 21 articles supporting the compact city with a more or less explicit reference to sustainability, some do not refer specifically to this model, but instead refer to broader policy strategies in which dense and concentrated urban development is a key element. The policy strategies referred to are mainly the National Policy Provisions on Coordinated Land Use and Transport planning and the Sustainable City program. Some articles also refer to specific location strategies derived from the compact city model (notably the Dutch ABC principle for workplace location) without mentioning urban densification or the compact city model itself. Examples of authors referring to the compact city indirectly or implicitly in such ways are Leknes, 1994; Bjerga, 1995, 1996 - and the previous Minister of the Environment Thorbjørn Berntsen (1995). Some other articles also support the compact city model indirectly by referring to relationships between land use and travel (Fredriksen, 1996; Næss, 2004) or by stating that the amount of urban transport has to be reduced for sustainability reasons (Holden, 2003). A few other articles take the prioritization of densification and compact city development as a given fact (without questioning this strategy) and focus on ways to ensure that this strategy can be pursued with the highest possible local-area housing quality (Bjørneboe, 1995; Lund, 2003).

Whereas the majority of the above-mentioned articles are written by planning practitioners, planning consultants and politicians, the articles giving explicit and direct support to the compact city model with reference to its sustainability merits are more frequently written by researchers. Rasmussen (2000 and 2006) supports compact city development and recommends higher densities than what has been practiced so far in Oslo, clear urban area demarcation, sufficiently high density within each settlement to provide a base for local service and public transport, and workplace location according to the Dutch ABC principles. Næss (1995) supports

compact city development, based on studies of relationships between urban structure and transport. High overall and local density and a concentration of development toward the city center is recommended. Næss & Strand (1997) repeat these recommendations. At the same time, they argue against regional and national-scale centralization from rural areas to large cities. Næss & Saglie (1996) also argue in favor of compact city development but admit that the different contexts of different cities and settlements must be taken into consideration. Høyer (1996 and 2005) supports the compact city model, based on (among others) relationships between land use and transport. Nenseth (2004) has developed a set of indicators for sustainable urban development, where high overall urban density contributes to a high score. In addition to the above-mentioned articles, which are all written by researchers, there are also some articles by practitioners giving explicit support to the compact city mode, including Fersum & Roald (1994) and Ljones et al. (2000). In addition, the invitation announcement to the Norwegian Planning Conference (1998) condemns urban sprawl and supports revitalizing of urban centers by constructing centrally located urban dwellings.

One third of the 18 articles expressing some support of the compact city model without mentioning sustainability give explicit and strong support of this mode of urban development. Two of these articles are written by the director of the Planning and Building agency of Oslo, Ellen de Vibe. In an article from 2000 she characterizes four proposals for high-density development on previous harbor and other transport infrastructure areas in the inner city of Oslo as 'a long step toward a successful urban development' (deVibe & Hartmann, 2000). In a later article (deVibe, 2003) she presents and argues for the merits of Oslo Municipality's strategy for constructing 40.000 dwellings from 2001 to 2015. This plan is based on compact city development involving 'transformation, vertical growth and densification'. Other articles providing clear support of urban densification are Hanssen (1996), Strand (2001), Christofersen (2003), Holm (2003), Høysæter (2005) and Engebretsen (2005). The latter article presents research results from land use-travel studies bolstering the arguments for the compact city model. Engebretsen recommends location of a high proportion of new dwellings and workplaces close to the city center, and a concentration of the remaining development to a relatively few public transport nodes in which the supply of parking space is limited. While not discussing the compact city model explicitly, research results on land use-travel relationships presented by Næss (2005) also provide strong support of some of the key arguments in favor of this model. In contrast to the above mentioned articles where land use – travel relationships is an explicit or implicit argument for supporting the compact model, some other articles recommend this model mainly from architectural and 'urbanistic' ideals. (Falch & Brovoll, 2002; Sjaastad, 2001 a and b, 2003). In the latter article, Sjaastad argues for the attractiveness of high-density urban environments, partly because density enables access to a multitude of facilities, and partly because the street patterns typically found in the central city implies that the buildings open up towards and are accessible from the streets. Some other authors bring sociological and demographic arguments in favor of densification and inner-city living. Schiefloe (2002) indirectly supports the compact city model by referring to changes in lifestyles and residential preferences leading to increased demand for inner-city living. Based on changes in the household structure, Grimnes (1994 and 1995) recommends a shift in residential construction from large dwelling units in single-family and other low-rise buildings to a larger proportion of smaller

apartments in more concentrated types of development. Finally, a couple of articles take urban development toward more compact cities as an underlying premise, without themselves presenting any arguments for or explicitly stating the desirability of such urban development (Gustavsen & Carlsen, 2001; Plahte, 2001).

In addition to the articles mentioned above, all of which give quite unconditional support to – or at least acceptance of – the compact city model, some other articles are basically sympathetic to dense urban development but only with certain reservations. Some of these articles argue that the impacts of densification strategies on transportation energy use and emissions may be smaller than claimed by its proponents (Duun, 1996). Holden (2002) largely supports the compact city model, yet within a context of 'decentralized concentration', where polycentric development is recommended in regions above a threshold population size. Holden also discusses the possibility of compensatory travel in the form of more flights among inner-city dwellers, and advices against dense urban development if such a relationship exists. This argument is repeated by Norland & Holden (2005). Some other authors are worried that densification will lead to loss of urban green areas. Nyhuus & Thoren (1994) prefer urban densification rather than urban sprawl, but warn against converting intra-urban green areas into building sites. They therefore support the smallest possible change in existing land use. Implicitly, they would prefer as little construction activity as possible. Djup (2006) argues against densification in green corridors, but at the same time depicts the existing, densely developed districts of Malmoe in a quite positive way. Overall, he characterizes Malmoe, which is a dense city by Nordic standards, as a city with an exemplary green structure. Finally, several authors fear that inner-city densification will lead to poor housing and neighborhood qualities if pursued to too high an extent. Guttu & Martens (1998) and Helle & Martens (2000) accept that environmental concerns may speak in favor of dense cities, but at the same time advice against exaggerated density at the cost of housing quality – especially as long as restrictions have not been imposed on car driving in inner-city areas. In their view, inner-city residential development should meet standards for private and public outdoor areas in order to be attractive to families with children. They argue against radical compaction, although they do not reject more moderate densification strategies. Similar views are expressed by Strand (1995), Martens et al. (2001) and Norland & Holden (2005). Strand (1995) is both supportive and critical to the compact city model, where the criticism applies in particular to the continued facilitation for car traffic, which threatens the local environment in many of the areas where densification takes place, and also undermines the gains in terms of travel behavior obtained through a compact urban development.

A few other articles admit that compact urban development may have some merits in large cities, but insist that this model is not appropriate for all types of urban settlements. Skjeggedal (1996a) criticizes the so-called NAMIT research project (where compact city development was a key recommendation) and the Sustainable City program for focusing on construction of new buildings rather than maintenance and improvement of the existing building stock, and for being top-down-oriented and establishing rules. He wants more variations in the recommendations and rejects the compact city as a general model for urban development in Norway. In another article (Skjeggedal, 1996b) he emphasizes that densification is not in itself sufficient to bring about sustainable urban development. It is also necessary to asses how parking and road construction are dealt with. He also claims that it is uncertain whether or

not dense and concentrated urban development will result in a reduction in the amount of transport. Skjeggedal is backed by Arnesen (1996) who emphasizes that the NAMIT principles cannot apply to all types of regions and areas in Norway.

Finally, about ten articles express clear skepticism against – or outright rejection of – the compact city model. Some of these articles raise doubt about the causal assumptions referred to by proponents of urban densification. Skjeggedal et al. (2003) criticize the compact city model, although not rejecting it completely. According to the authors, high density is generally not more environmentally friendly than low density (e.g. in terms of energy use for transport), especially not in small urban settlements. Their arguments are, however, of such a nature that they would, if valid, also hit densification as a strategy in large cities. Djup (2005) is also mainly critical to densification as an urban developmental strategy. Although seemingly accepting that dense cities lead to less travel and facilitates public transport (which he endorses), Djup too attempts to raise doubt about some of the research results that have shown such relationships. The same applies to Kyllingstad (2005), who emphasizes possible compensatory mechanisms (trips to cabins, double residence, and immigrants' visits to their home countries). Kyllingstad (1997) also argues against the compact city model, but this article seems to confuse concentrated development at the city/metropolitan level with centralization from rural to urban regions. Another group of articles express preference for other models of urban development than the compact city. Lorange (1999) seems to consider spatial urban expansion as necessary, although he also criticizes urban sprawl. Lorange's preferred type of urban development is the linear growth model proposed by the Greek urban planner Doxiades in the 1960s. Svendsen (1998) supports the garden city model in the form that it was re-launched in the 1990s by Peter Hall and Colin Ward. He thus rejects a monocentric compact city ideal. At the same time, he states that the individual garden cities should be more compact than what is the case with the relatively unplanned urban sprawl currently taking place. The garden cities are not assumed to be self-supplied with workplaces but should be connected to the major city with high-quality public transport. Brørs & Bysveen (2005) too support a polycentric urban structure with decentralizing of the growth in workplaces as well as population away from Oslo to medium-sized and small towns and settlements in an around the Oslo region. They also support increased mobility, but argue that a higher proportion of mobility growth should take place by public transport. Increasing the geographical size of the housing and labor market is considered positive because this increases the freedom to choose among alternative residential and workplace locations. Finally, a couple of articles pose critical questions about the implementation of compact city development. Selstad (2000) raises doubt about the possibility of the planning and public-sector intervention that he considers necessary in order to implement a dense and concentrated urban development. According to Ekeland (1996), we should not spread illusions about the environmental advantages of densification until economic measures have been establish to implement mitigating measures in areas where densification takes place.

Summarizing, the articles supporting the compact city development most frequently refer to the lower transport demands and car dependence in dense cities. Several of these articles refer to research into land use and travel relationships, and some articles also present new research demonstrating such relationships. A number of other articles refer to governmental pilot programs and guidelines in which a less transport-generating urban development is a key element. Some articles supporting

dense urban development instead base their arguments on demographic and cultural changes, in particular the increasing number of single and/or childless households with preferences for urban lifestyles. Partly, the arguments of the latter authors are mixed with architectural ideas about high-density urban environments. Maybe a bit surprisingly, none of the articles in support of the compact city bases its arguments on a wish to save surrounding forest areas or countryside from being converted into urban areas. This is quite remarkable given the long-time debates about the demarcation line between the urban zone and the outdoor recreation forests surrounding Oslo (the so-called Marka border). Before the global sustainability (and notably green gas emissions) problematic entered the urban planning agenda around 1990, protecting the Marka areas against urban development was maybe the most frequently used argument in favor of urban densification in Oslo. There is also little, if any, focus on the merits of compact city development in terms of protecting the scarce Norwegian farmland areas from being converted into building sites. Another potential argument in favor of urban compaction absent in the articles is construction costs, in spite of the fact that urban development into the rocky forested areas surrounding Oslo and many other Norwegian cities involves high infrastructure costs as well as costs for the preparation of each individual building site. Another topic that hardly appears in the debate is energy use in buildings, in spite of the fact that energy requirement for space heating differs considerably between different housing types, with apartment buildings typically less energy-requiring than single-family homes.

Housing quality and urban green structure are main concerns among articles expressing reservations or skepticism against compact city development. A key issue in the debate is the extent to which norms for playgrounds and outdoor areas based on families with children should be applied in inner-city densification projects. Proponents of strong inner-city densification reject such norms as being based on suburban (or even anti-urban) functionalist ideas and refer to the low proportion of families with children among the total number of households in Oslo. Proponents of minimum standards for outdoor areas reply that several families with children actually live in, and move into, apartments in the densest parts of the city. Their solution is more moderate densification combined with traffic calming and conversion of asphalted areas into areas for play and outdoor recreation. Restriction of car traffic and conversion of traffic areas is also recommended by many of the proponents of more radical densification. While there has been quite some debate about whether or not the needs of families with children should set the terms for inner-city housing projects, there appears to be more consensus that densification should not take place on urban green areas. Few, if any debaters have advocated for conversion of parks and intra-urban green areas into building sites. Some articles are still concerned about the fact that such conversion actually takes place in an incremental way, e.g. in order to provide sites for new kindergartens necessitated by population growth in densification areas.

Some other debaters see the compact city ideal as a threat against rural ways of living. Partly, they question whether there will be any difference worth mentioning in car usage between a compact and a more spread-out development of small towns and urban settlements. Implicitly, some of these debaters appear to consider the construction of apartment building in small rural centers to be a disruption of the rural housing culture. There is also an anti-urban current in the arguments of some of these articles. Urban densification may be considered as a strategy enabling cities to

absorb more in-migration than they would otherwise be able to cater for. This may perhaps explain why some of the debaters claim that proponents of compact city development unwarrantedly support accelerated centralization from rural to urban regions.

Several among the articles arguing against the compact city model attempt to raise doubt about the land use-travel relationships that make up important underpinnings of this model. This is a tactic often seen in professional and political debates over controversial issues; as such counter-claims may create a sort of cognitive incongruity that may favor inaction. In the Norwegian debate over the compact city, the skepticism about land use-travel relationships expressed in the above-mentioned *Plan* articles still does not seem to have won through.

In general, the ideal of dense and concentrated urban development must be characterized as hegemonic in the professional debate in *Plan* on spatial urban developmental strategies. In addition to the larger number of articles expressing support of this ideal, the fact that quite many articles take this model of urban development as a more or less given point of departure without bothering to explain why is an indication of this. This model's status as the hegemonic interpretation of sustainable urban development is also indicated by the fact that many of the articles elaborating into the merits of dense compared to sprawling cities (e.g. in terms of impacts on travel) do not find it necessary to refer to sustainability. The counter-discourse represented by densification skeptics is clearly a minority discourse. In particular when it comes to urban development in the larger urban regions, the compact city ideal faces only few and weak challengers in the *Plan* debate. This does not mean that there are not disagreements about the ways in which a compact city development should be implemented. Here, a distinction could be drawn between 'radical densifiers' adhering to 'urbanistic' city ideals and more moderate densification proponents according to whom density levels should be limited by concerns for playgrounds and local outdoor areas interspersed in each housing area.

## 4.10 Transport policy priorities

Among the 79 articles dealing with the spatial content of urban development, 46 do not at all express any priorities as regards transport infrastructure development. Obviously, this in part reflects the fact that several articles focus on the design of the built environment at a local city scale. Thus, among the 18 articles focusing on the local scale, only four address transport infrastructure issues, with conditions for bicyclists and pedestrians as the most prominent theme.

Among the 54 articles focusing on the city/metropolitan, comparatively fewer (one half) are silent about transport infrastructure priorities. Typically, these articles focus on the building stock or (to a much lesser extent) on the green structure of cities. The remaining 27 articles give strong priority to transport infrastructure development aiming to facilitate alternatives to the private car. Actually, only two of these articles supports road development, and then combined with improved public transport in order to lead traffic outside neighborhoods. (The same applies to the entire sample of 101 articles: None of the authors of these articles advocates urban highway development as the sole strategy, and only two go in for combined highway development and public transport improvement.) Instead, two thirds of the authors taking a standpoint on transport infrastructure development go for improved public

transport, whereas one third support a halt on road development, limitation of parking possibilities and/or road pricing schemes.

A little bit above half of the articles taking a standpoint on transport infrastructure issues explicitly refer to sustainable development. But as can be seen above, the remaining articles expressing views on transport infrastructure prioritization also go for strategies that most observers would describe as highly compatible with a sustainable urban development. Why then do these articles not refer to the concept of sustainability? As mentioned above, the community of planners and researchers within the field of transportation has apparently not adopted the sustainability rhetoric to the same extent as their colleagues within land use planning and urban design. Referring to sustainability is thus not a 'must' within transportation planning and research. This may reflect the strong influence on transport policies of actors and institutions that have only reluctantly accepted the sustainability agenda (which might be perceived as threatening among professionals working within institutions that have traditionally delivered arguments and plans facilitating further growth in car traffic). At the same time, those transportation researchers and planners who are concerned with sustainability challenges may be more prone to publish in journals like *Plan* than their less sustainability-oriented colleagues. It might therefore be interesting to compare the transportation infrastructure priorities of articles in *Plan* with articles dealing with the same topics in a journal rooted in more mainstream transportation research and planning, e.g. Samferdsel.

The transport policy actually implemented in Norwegian metropolitan areas and larger cities is a combination of road development and public transport improvement (the latter mainly occurring in the largest urban region, viz. Oslo Metropolitan Area). In contrast to this, only two of the 34 articles expressing transport policy priorities go for such a combination. And the motivation of these authors for building roads in addition to improving public transport is mainly to lead traffic away from residential and other areas where traffic would otherwise imply a substantial nuisance. Thus, at least at a rhetorical level, there is very little support among the authors of *Plan* articles for road capacity increases facilitating traffic growth. This has been the case during the whole investigated period, with small differences between the years before and after 2000.

The fourteen articles advising against road capacity increases in urban areas and/or recommending restrictions on car use are mainly written by spatial planners and planning researchers (including geographers, architects, urban & regional planners and social scientists) representing research institutes (in particular Norwegian Institute for Urban and Regional Research), universities, municipal planning agencies and consultant firms. The 21 articles advocating improved public transport are written largely by authors representing the same groups of disciplines as in the car-restrictive group of articles. The two articles recommending a combination of road construction and public transport improvements are both written by researchers from the Institute of Transport Economics (although not by economists).

Not surprisingly, a large number of articles (21) support a prioritizing of improved public transport in cities. This has for a long time been a key tenet of the discourse on sustainable and environmentally friendly mobility in Norway as well as internationally. Many of these articles mention the need such a prioritizing quite briefly (e.g. Djup, 2005; Duun, 1996; Fersum & Roald, 1994; Næss,1995; Fredriksen, 1996; Hansen, 1996; Næss & Strand, 1997; Svendsen, 1998; Roald,

2000; Ljones et al., 2000; Opedal & Strand, 2000b; and Nenseth, 2004). The same applies to the two articles (in 1994 and 1998) presenting the National Planning Conferences. Looking at the issue from a somewhat different angle, Brørs & Bysveen (2005) recommend improved public transport, in particular by train, as a necessary condition for obtaining a polycentric and competitive settlement pattern in Southeastern Norway. Some other articles are more specific and elaborate. Høysæter (2005) presents and promotes the planned new urban rail line in Bergen. Johansen & Strand (2005) also support public transport improvements but are skeptical to the planned urban rail line in Bergen. In their opinion, the proposed urban rail line will be so expensive in investment and operation that the remaining public transport services in Bergen run the risk of being reduced. Instead, Johansen & Strand recommend a less expensive bus improvement scheme.

Stendahl (2005) supports investments in rail-bound public transport and argues against the criticism posed by Strand and Johansen against the planned urban rail line in Bergen. According to Stendahl, the urban rail line will set important terms for future land use development in Bergen. Focusing on a different geographical area, Nielsen (2005) supports public transport improvements but is critical to whether the currently preferred version of a planned urban rail line to the urban transformation area at the former Fornebu airport in Greater Oslo will be sufficiently attractive. Only one article (Næss & Sandberg, 1998) presents results from research studies investigating how the field of competition between car and public transport influenced by improvements in the public transport system and the road system, respectively. This article too argues in favor of improved public transport, in particular such improvements that can reduce door-to-door travel times for commuters.

As much as 12 articles argue against road capacity increases in urban areas. Compared to the high degree of political consensus about such investments, this number of critical articles must be considered quite high. Strand (1995) recommends public transport improvement while rejecting road capacity increases as elements of a sustainable urban development. Strand (1997) elaborates on his criticism against road capacity increases in urban areas and also discusses the allocation of this capacity to different modes of transport. Changing previous car lanes into lanes for public transport is an efficient measure to influence the modal split. Opedal & Strand (2000b) criticize the cities participating in the Sustainable City program for prioritizing road capacity increases in their transport policy practice. In an article in 2001, Strand again opposes against road capacity increases and instead recommends road pricing as an instrument to deal with congestion and to avoid undesirable amounts of traffic (Strand, 2001). Several other authors argue along the same lines (Bjerga, 1995; Duun, 1996; Skjeggedal, 1996b). Lie & Grønning (1995) are critical to road tunnel construction in urban areas because such projects facilitate more capacity in the road network. Based on a study in two transport corridors of Oslo of how choices of travel mode are influenced by the travel time ratio between car and public transport, Næss & Sandberg (1998) argue in favor of a reduction of urban road capacity. Opstad (1994) criticizes the way the road-building sector threatens important local environmental qualities in Kristiansand. Without explicitly arguing against road capacity increases per se, his article is clearly critical to road construction facilitating more car traffic in the inner city. While all the above-mentioned authors argue against urban road development because of the traffic-inducing effect of increased road capacity, Carlsen (1999b) criticizes urban road

development mainly on the grounds of the encroachments on existing housing and other built-up areas this entails.

In addition, some articles (including some of those opposing road construction) argue for restrictions on car traffic (notably road pricing) (Ljones, 2000; Sjaastad, 2001b; Holden, 2003; Engebretsen, 2005) or limitations on parking capacity (Skjeggedal, 1996b; Næss & Sandberg, 1998; Ljones, 2000; Engebretsen, 2005; Nielsen, 2005). Most of these articles do not go deeply into these issues but refer to such policies as parts of more composite policy instrument packages for sustainable urban mobility.

As mentioned above, it is quite remarkable that only two articles express support of combined road building and public transport improvements, which is the strategy actually followed in many Norwegian cities (including Greater Oslo). Amundsen et al. (2004) support public transport improvements and local restrictions on car usage, but at the same time describe new urban road development (tunnels) as a measure that will often be a necessary condition for local traffic regulation and environmental improvement. Lian (2005) gives conditional approval of the road capacity increases that have taken place in Bergen and Oslo, but is critical to further increases in road capacity because this will not give improvements in non-peak periods (as was the case with road development up till now) but instead facilitate increased peak-period car traffic. The article at the same time points to the combined public transport and road construction efforts in Oslo as more successful than the more one-sided road construction strategy of Bergen.

Only a few articles address the conditions for bicyclists and pedestrians, and this issue is only a peripheral topic in the articles in question. Martens et al. (2001) recommend pedestrianization and separate walk/bike paths in residential areas, even in inner-city settings. Sliper & Spigseth (2007) mention the development of a better network of walk/bike paths

In addition, the two articles (in 1994 and 1998) presenting the National Planning Conferences emphasize the importance of prioritizing walk/bike.

## 4.11 Spatial content of urban development discussed without referring to sustainability

Among the 79 articles focusing on the spatial content of urban development solely or in combination with other issues, 35 address the issue of sustainable development while 45 do not. The share referring to sustainability is higher among the articles discussing the spatial content of urban development in combination with implementation conditions than among those articles where the spatial content is the only focus. However, as mentioned above, the fact that an article does not refer explicitly to sustainable development in the text does not in itself imply that the author is unaware of or indifferent to sustainability challenges. To some extent, the objective of a sustainable urban development has become ‘taken for granted’ among urban planners (although considerable contest still exists regarding how the concept of sustainability is to be interpreted and which spatial strategies are conducive to such development). Many of the articles not referring to the concept of sustainable development thus discuss issues highly relevant to sustainability and recommend solutions in accordance with widely held criteria of sustainable development.

Yet, some of the articles also discuss the spatial content of urban development from a different angle, e.g. in the light of sociological and cultural changes.

The proportions of articles explicitly referring to, respectively not referring to the concept of sustainable development has remained stable during the whole investigated period.

## 4.12 Barriers to a desirable urban development

Among the investigated 101 articles, nearly four out of ten mention some sorts of barriers to a sustainable (or otherwise desirable) urban development. The absence of references to barriers in the remaining articles does not necessarily imply that these authors consider that there are no barriers to the achievement of sustainability goals. For many articles, the focus is not on implementation conditions but on the spatial content itself. The choice of such a focus does not imply that the authors are unaware of implementation conditions and barriers – in fact several of the authors of articles focusing on spatial content have focused on barriers against sustainability in other publications. The fact that four out of ten investigated articles explicitly refer to barriers must therefore be taken as a relatively high awareness of obstacles against a sustainable/desired development among the authors of *Plan* articles on urban land use and/or transport infrastructure planning, sustainable development and/or the combination of these topics.

The frequency by which barriers are referred to seem to be relatively independent of the geographical scale focused on, whether or not the concept of sustainability is explicitly mentioned, the interpretation of this concept, the main sustainability issue focused on and the period in which the article is published. Also, there are only small variations according to the aspects of the spatial content focused on, although articles dealing with transport infrastructure refer to barriers slightly more often than the remaining articles dealing with the spatial content. Among articles expressing transport policy priorities, barriers are mentioned three times as frequently among those articles recommending restrictions on car traffic and/or advice against road capacity increases than among those recommending improved public transport without opposing facilitation for car traffic.

The strongest focus on barriers is among articles dealing with the influence of institutional frameworks in promoting or counteracting a sustainable urban development. Among the 30 articles focusing on the role of institutional frameworks, barriers are mentioned more than three times as frequently as among the remaining articles. Conversely, all the seven articles having institutional frameworks as their main focus mention barriers to sustainable development, compared to only one third of the remaining 94 articles.

Interestingly, none of the authors of the few (5) articles questioning the sustainability of the growth in the building stock mention any barriers to sustainable development. To the extent that an ecologically based criticism against economic growth and consumerism exists in the Norwegian planning discourse, this criticism thus seems to be quite unrelated to any analysis of the social conditions creating and depending on this growth.

The type of barrier mentioned most frequently is lack of coordination between different national-government authorities. Eight articles address this more or less explicitly as a barrier. Based on an evaluation of the state-initiated Sustainable City

Program, Opedal & Strand (2000 a and b) highlight lack of coordination between national-government authorities (especially the passive and partly negative role of the Ministry of Transport) as a barrier to sustainable urban development. In their view, lack of support from the Ministry of Transport was an important cause of the failure of the Sustainable City program to achieve its goals. Lack of coordination between different national authorities is also mentioned as a barrier by Amundsen et al (1994), Bjerga (1995), Plahte (2001) and Christoffersen (2003), often with a particular emphasis on the disconnection between the policies pursued by the Ministry of Transport and the Ministry of the Environment. Even the former Minister of the Environment, Thorbjørn Berntsen (1994) implicitly hints at the fact that the Ministry of Transport has the responsibility for implementing an environmentally sound transport policy as a barrier to implementing the goals of the Sustainable City program. Not only is the lack of support to sustainability goals from the Ministry of Transport identified as a barrier. Also a lack of coordination between different policy areas under this ministry (notably those responsible for road construction and public transport provision, respectively) is criticized. Thus, Strand (1997) points at inappropriate organization of the transport sector as an important barrier to implementing national transport policy goals.

In addition, several articles mention lack of inter-sector coordination locally (Roald, 2000; or lack of coordination between the municipalities within a region (e.g. Rasmussen, 2000; Holm, 2003; Nielsen, 2005) as barriers to sustainability.

Many articles also mention lack of vertical coordination (i.e. between authorities at different tiers) as a barrier to sustainability. Rasmussen (2006) highlights exaggerated belief in local (municipal) self-governance as an important barrier to a more sustainable urban development. In a similar vein, Falleth & Johnsen (1997) consider too much devolution of responsibility to the municipalities to be an obstacle to sustainable land use. Similar views are expressed by Carlsen (2000), Plahte (2001) and Nielsen (2005). Based on a survey of prioritizations in municipal environmental policy, Harsheim & Hovik (1997) show how municipal authorities tend to focus on local consequences at the cost of impacts manifesting themselves elsewhere or at a global scale. Their study thus supports the arguments of debaters who hold that municipal self-governance should be reduced for issues influencing e.g. carbon dioxide emissions.

Increasing influence of market mechanisms and agents on land use and transport policy decisions is also mentioned in several articles as a barrier to sustainability. General trends of deregulation, public sector withdrawal from previous policy areas and the penetration of "market thinking" in the public sector are mentioned as barriers by Kyllingstad (1995a), Opedal & Strand (2000a), Rasmussen (2000), Roald (2000) and Martens et al. (2001). Related to this, some authors point to the influence of private businesses on land use decisions as a barrier to sustainable solutions, at least potentially (Carlsen, 1999b; Djup, 2005, Habhab, 2005; Aakervik, 2006).

Other authors focus on shortcomings in planners' skills and knowledge and their allegedly biased attitudes. According to these authors, failure to implement sustainability within the transport sector is partly due to poor planning 'craft' and skills (Bjerga, 1995; Strand, 1997), 'the apparent naiveté of planners' (Lie & Grønning, 1995) and prevailing attitudes among professionals (Carlsen, 1999b). Planners' unawareness of possible unintended, negative side-effects of urban sustainability strategies is also identified as a barrier (Selstad, 2000; Norland &

Holden, 2005). Planners and architects are also accused of championing modernistic and anti-urban ideals and norms preventing them from designing desirable urban solutions (Sjaastad, 2001b and 2003). On the other hand, some debaters consider architects uncritically championing an 'urban' ideology to be barriers to a desired urban development (Martens et al., 2001). Myths among planners about the merits of densification (Skjeggedal, 1996) are also mentioned as an obstacle to obtain sustainable urban development.

Finally, shortcomings in the legislation are addressed in a few articles. The shortcomings in question are lack of legislation to secure the implementation of and the desired qualities in urban densification (Plahte, 2001), including a lack of legal instruments for imposing economic compensation mechanisms to compensate for neighborhood-level distributional impacts of densification projects (Ekeland, 1996).

The strong focus of many articles on lack of horizontal coordination, especially between the policies of the Ministry of the Environment and the Ministry of Transport, may leave the impression that the main barrier to sustainability is basically one of streamlining national-government authorities so that there will no longer be inconsistency between the policies pursued by the different ministries. However, it is not granted that this would in itself produce more sustainability. A possible result of such coordination might be that the policies of the Ministry of the Environment would have to be adapted to the policies of the Ministry of Transport, rather than the other way round. In fact, this is not only a possible scenario, but arguably also the most likely one, given the political and economical power bases of the two ministries. Coordination without changing these power relations might imply that the Ministry of the Environment would no longer be allowed to formulate controversial environmental and sustainability objectives or initiate 'subversive' pilot projects like the Sustainable Cities project. The identification of lack of coordination between national-government authorities as a barrier could therefore alternatively be framed as the barrier being the uneven power relation between the Ministry of Transport and the Ministry of the Environment. The former is rooted in a tradition of 'predict and provide' supported by strong vested interests, with cost-benefit analyses as the preferred method of project evaluation and with a staff largely belonging to the same professional culture as the powerful Ministry of Finance. In contrast, the Ministry of the Environment has a more multidisciplinary staff speaking other jargons than the hegemonic economist speech, has no strong allies among the economically powerful groups in society, is based on 'softer' planning and decision-making tools, and represents goals and concerns that are 'up against the tide' of increased market demand for road space and an increasing political perception of road development as necessary to maintain urban competitiveness.

The barrier of missing vertical coordination could also be redefined as one that has to do with power relations between central and local authorities. The nature of these relationships depends on the substantive topics of coordination. For road development, municipal political leaders and the responsible state authorities (the Ministry of Transport and the Highway Directorate) have usually largely identical, pro-road construction views. Here, lack of vertical coordination is usually not seen as a barrier. For land use, where the Ministry of the Environment is the responsible national authority, conflicts of interest between municipalities and national goals may more often occur, e.g. in situations where municipalities in a region compete for inward investment. Since the municipalities are the ones that in such cases represent the growth-oriented policies, they will often have more allies among politically and

economically strong agents and among other ministries (e.g. the Ministry of Finance and the Ministry of Trade and Industry) than the Ministry of the Environment has. The latter ministry will therefore often not be able to impose its sustainability strategies on municipalities where these strategies are in conflict with local growth strategies. Again, what might appear to be a coordination problem may on closer inspection rather be interpreted as a problem of powerlessness of the Ministry of the Environment. (In this case too, 'coordination' could imaginably be established by removing or downplaying goals and strategies of the Ministry of the Environment that are controversial in relation to local growth aspirations.)

One interesting question is why so few of the *Plan* articles, if any, explain the missing implementation of sustainability goals of the Ministry of the Environment in a power perspective instead of in terms of lack of coordination.

## 4.13 Growth – an assumed good?

As mentioned above, only five among the 101 investigated articles raise any critical questions about the sustainability of further growth in the building stock. Four of these are from the 1990s. Growth criticism seems to be rather non-existing in the Norwegian planning discourse in the beginning of the 21st century. Not surprisingly, all the five articles questioning the desirability of growth have an explicit focus on sustainable development.

Among the five articles, three explicitly problematize growth in the building stock whereas the remaining two articles address mobility growth and consumption growth in general. Nygaard (1997) points to the fact that developed countries must change their living conditions if they are to follow up their international environmental conditions, since our consumption level within e.g. the residential sector is not environmentally sustainable. Nyhuus & Thoren (1997) recommend that we should ideally neither expand the urbanized area nor increase densities within existing urban areas. But "since we want growth", they consider that the least undesirable is to densify on "gray" areas. Næss & Saglie (1996) argue that opponents of densification do not promote environmental sustainability unless they also oppose growth in the building stock, since spatial urban expansion is more environmentally harmful than densification. The authors sympathize with such a halt in the growth, but warn against resistance against densification based on this premise under current pro-growth conditions. Among the two growth-critical articles not addressing growth in the building stock, Hille (1995) deals with possibilities within a wide range of domains for reducing the level of consumption as a contribution to sustainability. Implicitly, this implies a criticism of growth in consumption. Holden (2003) criticizes the assumption of the Brundtland Commission that growth in consumption can be decoupled from negative environmental impacts through eco-efficiency and substitution. More specifically, his article argues that we need to reduce the amount of transport and not only focus on vehicle technology and modal split.

In summary, the handful of articles raising questions about growth in consumption levels in rich countries generally or growth in the building stock specifically formulate their criticism in a quite modest way and do not dive into the implications of zero-growth in terms of social conflicts over scarce material goods or confrontations with driving forces of the market economy. To the extent that growth criticism is formulated, this only makes up a small part of the articles (with Hille's

article as an exception). The articles dealing with the building stock state that non-growth would be the most environmentally sustainable, but consider this to be completely unrealistic under current conditions, and therefore quickly move on to discuss what would be the environmentally second-best solutions if growth in the building stock cannot be avoided.

## 4.14 Institutional frameworks

Seven among the 101 articles have institutional frameworks as their main focus, whereas another 24 articles address such frameworks to some extent. The most common focus of the articles dealing with institutional frameworks is coordination across sectors (horizontal coordination) and tiers of administration (vertical coordination). Each of these topics is addressed in sixteen articles, among which a few articles cover horizontal as well as vertical coordination.

Apart from one article that is skeptical to attempts to increase coordination horizontally as well as vertically, all the remaining articles dealing with these issues call for more coordination. Several authors ask for more coordination between national sector authorities. In particular, a need for better coordination between the Ministry of the Environment and the Ministry of Transport is emphasized. This is underlined, among others, in two articles by researchers who have evaluated the state-initiated Sustainable City Program (Opedal & Strand, 2000 a and b). Interestingly, a call for better coordination between the two ministries can also be read between the lines in an article by the by the time Minister of Environment (Berntsen, 1994), who refers to the recently adopted National Policy Provisions for Coordinated Land Use and Transport Planning by emphasizing that the responsibility for an environmentally sound transport policy for cities lies with the Minister of Transport, whereas the Minister of the Environment himself would concentrate on land use.

Several authors also address the need for better coordination across municipal borders in the Oslo region, recommending a transfer of responsibility for land use planning from the municipal to higher-level authorities and/or more national-state intervention in land use planning (Falleth & Johnsen, 1997; Rasmussen, 2000). Some other authors ask for national-government incentives to encourage coordination between different sectors at a local scale (e.g. Ekeland, 1996 and Christoffersen, 2003). Such incentives would not the least require better coordination between national-government authorities in order to avoid the currently quite common situation that different state sector authorities put mutually incompatible demands on the municipalities. One article (Strand, 1997) addresses the lack of coordination between different areas of responsibility within the Ministry of Transport, where road planning does not seem to be coordinated with planning for public transport and the political goals of increasing the market share of the latter mode.

As mentioned above, one single article is skeptical to attempts of more coordination. The author (Selstad, 2000) argues for more local autonomy, based on what seems to be a combination of anarchist/communitarian and liberalist ideas, with references to thinkers such as Charles Lindblom and Friedrich Hayek.

Whereas the articles dealing with horizontal coordination are almost unanimous in their call for stronger such coordination, the articles addressing vertical coordination somewhat more heterogeneous in their recommendations. An article summarizing

the debate at the final conference of the above-mentioned Sustainable City Program (Forseth, 2000) mentions that the mayors attending the conference were opposing a higher degree of county-level control over municipal land use planning. In addition to the above-mentioned article by Selstad, who is skeptical to a strengthening of horizontal as well as vertical coordination, there is one article highlighting in a positive manner a local initiative based on radical decentralization and local self-governance (Aakervik, 2006). One other article (Lund, 2003) discusses rule management vs. goal management as an instrument for the Norwegian State Housing Bank to promote quality in urban housing, stating that some government by rule will be continued, yet with a reduction and a correspondingly stronger emphasis on management by objectives. There is also an article considering that the present extent of vertical coordination has been suitable in the case of the redevelopment of the former main airport of Oslo at Fornebu (Habhab, 2005).

However, there are also a number of articles asking for a higher extent of vertical coordination. For many of these authors, this means stronger national-government or county control over local land use and/or transport planning (Leknes, 1994; Falleth & Johnsen, 1997; Opedal & Strand, 2000 a and b; Roald, 2000, Nielsen, 2005). Other authors call for a more proactive national-government policy and guidance directed towards cities (Ljones, 2000; Amundsen, 2004. Strand (1997) calls for better horizontal organization of the transport sector as a means to ensure better local implementation of national goals.

The influence of planning vs. the market is addressed in eight articles. Five of these are negative to the increased influence of market mechanisms in planning and decision-making. Roald (2000) considers deregulation to be a paradox in an era where better management of scarce common resources is called for. Røe (1998) holds that market powers must operate within clear frameworks based on environmental load. Clear skepticism to the increased market influence is also expressed in the articles by Rasmussen (2000), Djup (2005) and Høyer (2005). On the other hand some authors seem to take the neoliberal turn in planning as a given (although problematic) fact, and ask for more proactive responses, e.g. in order to facilitate private-led urban densification (Plahte, 2001; de Vibe, 2003; Jensen, 2004).

The roles of civil society and cultural conditions are addressed in only two articles, and the focus of these articles is only partly on this topic. One of these articles, written by the mayor of one of Oslo's neighbor cities, asks for stronger national-government efforts to involve civil society in improving urban development and sustainability through Local Agenda 21 processes (Christoffersen, 2003). The other article describes and sympathizes with a grassroots initiative where squatters have – after years of fighting municipal slum clearance plans – succeeded in obtaining a status of their local area as an "urban ecological tryout district", based on a high extent of direct and participatory democracy (Aakervik, 2006).

The transition of public planning and decision-making toward a lower extent of hierarchic governmental control and a higher reliance on network-based governance with a large extent of stakeholder influence is addressed in only two articles (Jensen, 2004; Halvorsen, 2004). Jensen points at some problematic consequences of the governance model to long-term sustainability, democracy and needs that cannot be expressed as market demand. At the same time, he calls for a more proactive approach among planning researchers in order to develop governance models by which such problems can be reduced. Halvorsen is more positive to existing

governance processes, which are considered to provide increased possibility for 'fiery souls' and interested professionals to exert influence.

In summary, the articles dealing with institutional frameworks place a large emphasis on the need for better coordination. "Strengthened coordination" could perhaps be proclaimed as one of the main story-lines of the planning discourse as it appears in the articles of the journal *Plan*. In particular, there is a widespread opinion that horizontal coordination needs to be improved, especially between national-level sector authorities and policy domains but also across municipal and county borders. In order to obtain the latter type of coordination, many authors recommend stronger vertical coordination in the form of national-government control over land use and transport planning, with correspondingly reduced local autonomy. However, other authors consider that vertical coordination should rather take place by means of guidance and proactive initiatives by national-government authorities. Some authors also maintain that a high responsibility should be located at the local (and even sub-municipal) level in order to encourage citizen involvement. The authors of *Plan* articles are – to the extent that they address the issue – not enthusiastic about the increased influence of "market logic" on public planning and decision-making. Some authors still recommend researchers and practitioners to adapt to rather than try to resist this transition. This duality is also reflected in the articles dealing with governance and stakeholder influence. The roles of civil society and culture are addressed only in a very few *Plan* articles, in spite of the prominence of these issues in much of the international planning and social science literature.

## 4.15 The role of economic driving forces

Among the total number of investigated articles, one eighth (13 articles) mention economic, structural forces of urban development. These articles are quite evenly distributed between the periods before and after 2000. Interestingly, articles skeptical to compact city development are strongly overrepresented among those articles referring to economic-structural forces of urban development. Nearly one half of the articles expressing a skeptical or rejecting attitude to compact city development refer to such forces, compared to only one fifteenth among the remaining articles. At the same time, articles referring to economic, structural forces are explicitly mentioning sustainable urban development more frequently than the articles in which there is no mentioning of such driving forces. Articles recommending restrictions on car usage/reduced road construction mention such driving forces more frequently than the remaining articles.

The articles refer to three main ways in which economic, structural forces influence urban development. First, the market mechanisms contribute to centralization from rural areas to urban regions (Kyllingstad, 1997) and, during the recent period, to increased urban densification, in particular at inner-city locations. Thus, Strand (2001) holds that the Norwegian success in obtaining a compact urban development is due to the congruence of governmental objectives and the profit-oriented priorities of land owners who try to obtain a higher utilization of their sites. Ekeland (1996) considers densification as being primarily a question of profit for developers, while Helle & Martens (2000) call attention to the increased construction of (too) small apartments in inner-city areas, driven by market mechanisms. Halvorsen (2004) shows how market forces can stimulate to densification and workplace location close

to the city center, provided that the areas in question have been made attractive through a governance process.

Second, market conditions are considered by some authors to contribute to and/or necessitate policies aiming increased mobility. Nielsen (1994) points to the rise in car ownership following from economic growth and increasing purchasing power. The growth is associated with increased workforce participation among women, which in its turn implies more journeys to work and additional car traffic. According to Brørs & Bysveen (2005), economic competition between different regions in the EU makes up an important premise for policies aiming at increased mobility between different cities and settlements within the Greater Oslo region. Carlsen (1999) points to economic driving forces indirectly by referring to influences from car-producing companies and road construction firms as obstacles to a non-car-based urban development.

Third, in addition to pulling the contents of urban development in certain directions, the increased role of the market has changed the conditions for urban planning. Ellefsen (2004) states that 'the replacement of plan economy with market economy' has implied a gradual breakdown of the institutions of planning. The article by Lund (2003) includes a figure, according to which "the state governs, the municipalities decide, but the market rules", whereas Kyllingstad (1995) refers to "market thinking" as a barrier to a sustainable development.

Most of the articles that mention economic-structural driving forces of urban development are quite critical to the increased influences of such forces experienced as policy paradigms have turned more and more in a neoliberal direction. A few articles focus on how planning can facilitate growth and competitiveness in a situation where these objectives are top political priorities. The remaining articles dealing with economic-structural forces lament the increased imprint of these forces, but do not raise any fundamental critique. One reason for this (and for the fact that the large majority of investigated articles do not mention economic-structural forces at all) may be a perception of the current market pressure for densification as being largely compatible with criteria of sustainable urban development. Another reason may be resignation based on a widespread assumption that "there is no alternative" to the neoliberal agenda.

# 5 Interviews with key stakeholders in planning and decision-making

## 5.1 Introduction

As mentioned in Chapter 1, in-depth, semi-structured interviews were carried out with some key participants of the planning and decision-making process on urban development in the Oslo region. The interviewees included:

- key politicians at municipal and county level: Grete Horntvedt (Conservatives, previous leader of the Standing Committee on Urban Development in the municipality of Oslo and Commissioner for Urban Development); Ola Elvestuen (Liberal Party, present leader of the Standing Committee on Urban Development in the municipality of Oslo); Erlend Helle (Socialist Left Party, leader of the Standing Committee on Environment and Transport in the county of Akershus)
- key bureaucrats at municipal and county level: Rolf H. Jensen (previous Director of the Department of Urban Development in the municipality of Oslo); Ellen de Vibe (Director of the Agency for Planning and Building Services in the municipality of Oslo); Erik Dahl (Head of Division, Division for Urban Development, Agency for Planning and Building Services in the municipality of Oslo); Knut O. Gabestad (Director of the Agency for Road and Transport in the municipality of Oslo)
- national-level bureaucrats: Wilhelm Torheim (Previous Head of Division in the Ministry of Environment, Division of Urban Development, regional, land use and transport policy); Anne Brendemoen (Head of Division in the Ministry of Transport and Communication, Division of Environment and Public Transport)
- representatives of non-governmental organizations/private enterprises: Esben Madsen (Deputy Executive Officer of Avantor - a developer company responsible for some of the largest urban transformation projects in Oslo); Holger Schlaupitz (Transport Consultant in the Nature Conservation Association of Norway).

Each interview was first analyzed, using a common checklist. Thereupon a synthesizing analysis was made, on which the present chapter is based. The raw synthesizing is documented in an unpublished English-language working paper (Næss, T., 2009).

In the following, we will first present the interviewees' opinions about the actual spatial development that has been going on in Oslo Metropolitan Area since the 1990s. Thereupon, the interviewees' conceptions of the term of sustainable development will be addressed, along with their opinions about any challenges to

urban development posed by sustainability goals. Next, the interviewees' own prioritizations as to spatial urban development and transport policy in Oslo Metropolitan Area will be presented, followed by a section on their opinions about the influences of various stakeholder groups on the urban development in this urban region. Finally, their views on any barriers to a desirable urban development and the influences of institutional, administrative and economic-structural conditions in promoting or counteracting a sustainable urban development will be addressed.

## 5.2 Opinions about land use development since the 1990s

Overall, the interviewees quite unanimously support the overall urban densification strategy that has been followed in most of Oslo Metropolitan area since the 1990s. None among our interviewees say that they would rather have preferred low-density urban expansion, and no one regrets the fact that the Marka border in Oslo has been kept unchanged. To the extent that they are dissatisfied with the ways the spatial urban structures in the region have developed during the period, this applies mainly to residential and especially workplace development on 'greenfield' outside existing urban area demarcations in the outer parts of the region. There are, however, also those who express concerns about lack of outdoor space in some of the densest infill developments that have taken place in Oslo.

In regards to *densification versus sprawl*, six of the interviewees (Elvestuen, Brendemoen, de Vibe, Madsen, Horntvedt and Schlaupitz) explicitly express positive statements about the densification that has taken place during the recent two decades. The fact that the remaining five interviewees do not mention densification explicitly does not mean that they are not positive towards the development that has taken place – which we will see in the following.

Liberal Party politician Ola Elvestuen, who is leader of the Standing Committee on Urban Development in the municipality of Oslo, appreciates the fact that there has been virtually no expansion of the urban area in spite of considerable population growth. Anne Brendemoen, who is heading the division working with public transport and environmental issues in the Ministry of Transport and Communication, generally considers that Oslo has done fairly well during the latest ten to fifteen years, judged against criteria of sustainable urban development. According to Wilhelm Torheim, previous head of the division within the Ministry of Environment dealing with urban development, regional land use and transport policy, land use in Oslo Metropolitan Area has to some extent occurred according to "the state of the art", especially within the municipality of Oslo. The same applies to some suburban centers, such as Lillestrøm, which is a good example of densification, Sandvika, Bekkestua and partly the center of Asker. Oslo's Chief Urban Planner Ellen de Vibe considers that the municipal plans of Oslo are to a high extent based on the principles of compact city and development close to public transport nodes, which in her view is favorable to sustainability, and that the actual urban development has been in accordance with these overall strategies. It is also noted by some interviewees that the densification has brought about a more "urban life" and intensiveness in the city.

De Vibe admits that the densification strategy has sometimes led to a pressure to increase densities in certain areas above what would be desirable in terms of sunshine, view and space between the buildings. This is a concern also expressed by Nature Conservation Association representative Holger Schlaupitz. At the same time

de Vibe thinks some of the criticism against dense development projects has been misguided and has failed to take into consideration the sustainability goals of reducing land take and emissions from transport.

Property developer Esben Madsen and de Vibe both mention Nydalen as a fine example of successful densification and mixed-use. Madsen thinks, though, that building densities in Oslo have been quite moderate compared to some other European cities, partly because Oslo has been restrictive toward the construction of high-rise buildings.

Some of the interviewees mention how the Marka areas have been protected and how this has stimulated densification. Previous Director of the Department of Urban Development in the municipality of Oslo, Rolf H. Jensen, thinks the adopted urban demarcation against the Marka border has been an important condition in order to create interest among developers for (the successful) densification and transformation of brownfield areas at public transport nodes.

Several of the interviewees (Madsen, Schlaupitz, Jensen, Horntvedt, de Vibe, Dahl) speak in positive terms about the *location of dwellings* close to the city center. Madsen emphasizes the fact that Nydalen became a mixed-use and dense area with a considerable number of residences instead of becoming a monofunctional workplace area as indicated in the original municipal plans. He thinks this has resulted in a new urban district conforming to a high extent with sustainability criteria.

As to the *location of workplaces* close to the city center it might be repeated that Madsen emphasizes Nydalen as an example to follow – with its mixed-use. Madsen also emphasizes the good accessibility by public transport and the low share of car commuters to the workplaces and places of education located in the area. Madsen thinks – maybe a bit optimistically – that, unlike some years ago, it is hardly any longer possible to establish a major industrial or office development area based on car traffic. Schlaupitz mentions the concentration of workplace development to public transport nodes like Skøyen, Lysaker, Blindern, and Nydalen as positive examples within the municipality of Oslo. On the Akershus side of the county border, Schlaupitz mentions workplace locations close to the rail stations of local centers like Lillestrøm and Sandvika as other positive developments. According to Schlaupitz, the new high-speed rail line to Gardermoen airport has increased the attractiveness of these centers as company locations.

However, apart from some positive examples, several interviewees are critical to what has been going on in the county of Akershus. Urban Development Head of Division Erik Dahl in the municipality of Oslo thinks that the Akershus county council's adopted policy of channeling development to areas close to public transport nodes has been implemented in a watered-out way, based on a too loose conception of what can be characterized as a public transport node, and partly with development far away from any type of node-based urban center. Schlaupitz expresses similar concerns. As an example of an undesirable workplace location, Schlaupitz mentions the Lahaugmoen commercial development area in Skedsmo, which will be a largely car-based area although it is not particularly peripheral relative to the local center of Lillestrøm. Madsen points at the relocations of the Postal Agency, Coca-Cola and the Ringnes breweries to car-dependent outer-area sites as especially unfavorable examples of workplace location. Torheim also emphasizes that land use in the outer-area municipalities has been quite car-based, especially when it comes to the location

of workplaces. He thinks there is still some car-based residential location in the suburban municipalities, but not as much as earlier.

The Socialist Left Party politician Erlend Helle, who is leader of the Standing Committee on Environment and Transport in the county of Akershus, expresses a view on workplace locations that differs from those among the other interviewees. According to Helle, the municipal plan for Oslo contributes in the opposite direction of reducing the intra-regional amount of transport. Two thirds of the 120,000 new workplaces in the Oslo-Akershus region established during the period 1995-2007 have been located to the municipality of Oslo, Helle says, most of which inside Ring Road 3. (These figures do, however, not fit with figures given by Statistics Norway, cf. chapter 2.4.) Helle thinks such a distribution of job growth is negative for sustainability, since the population growth is equally distributed between Akershus and Oslo. Instead, he mentions the establishment of IT companies at the previous airport area Fornebu in Oslo's western neighbor municipality Bærum as a positive example. Given the fact that 40 % of the workforce participants of this municipality have a high-level education, Helle thinks the prospects for recruiting employees locally to the IT jobs at Fornebu will be good.

A few interviewees also comment on the location of *shopping-, service- and leisure facilities.* Jensen mentions a plan for use of the Oslo Fjord areas (marinas, bathing areas, routes for commercial vessel traffic, protected zones etc.) as an achievement in its process, althogh implementation is slow. He is, on the other hand, dissatisfied with the poor provision of local and neighborhood-level public services such as primary schools and kindergartens. Schlaupitz regrets the fact that the densification has also meant that many small intra-urban green areas have been taken as building sites, not the least for kindergartens etc. Madsen admits that some tradeoffs have to be made between the wish for a high density (not the least for economic reasons) and the wish for open recreational areas, but in the case of Nydalen he thinks the result is fairly well-balanced. The contribution of the Akerselva River as a recreational element has contributed to this, he says.

## 5.3 Opinions about transport infrastructure development and transport policies since the 1990s

There is a quite widespread opinion among the interviewees that the public transport services in Oslo Metropolitan Area have improved since the 1990s, especially in the municipality of Oslo. Nearly all the interviewees who at all express any opinion on how public transport has developed share this view. On the other hand, there is an equally widely held view that there has been disappointingly little improvement in the conditions for non-motorized travelers, especially bicyclists. Opinions are more diverging when it comes to how the development of road infrastructure is evaluated. Some are mainly positive, others quite negative, and some consider the results to include positive as well as negative elements.

Seven interviewees (Brendemoen, de Vibe, Elvestuen, Helle, Schlaupitz, Madsen, and Torheim) explicitly mention *public transport improvements* as examples of positive traits of the spatial development of the region since the 1990s. According to Schlaupitz, it is widely held that traveling by public transport has become more convenient during recent years. Examples mentioned include new streetcar and urban rail lines, more frequent departures, separate transit lanes in the streets, and priority

for public transport vehicles at crossings. These improvements have been accompanied by a rising number of passengers, showing, according to Schlaupitz, that it is possible to attract new public transport riders. Madsen, Brendemoen, de Vibe, Torheim and Schlaupitz emphasize the new urban rail ring line (the Metro Ring). In particular, de Vibe mentions the metro station of Nydalen as an important catalyst for a desirable urban transformation. Elvestuen calls attention to the connection of the western and eastern urban rail lines as a major achievement. Before 1987, there was no connection at all between the stations Stortinget and Nationaltheatret in the city center, and cross-city passengers therefore had to walk half a kilometer. Between 1987 and 1995, eastern and western lines both ended at Stortinget station, but it was not until 1995 that through-going trains started operating.

Brendemoen and Schlaupitz talk about a project for better-flowing public transport (buses and streetcars) – the so-called Frem 2005 project, and Brendemoen as well as Torheim emphasize the increased frequency of departures of the streetcar lines (one departure each 5 minute during most of the day) as examples of improvements during recent years. De Vibe also mentions the new tram line at the Fjord (partly constructed and partly at the planning stage), and some Park and Ride facilities.

Brendemoen points to the fact that traffic has not grown more in Oslo Metropolitan Area than in other parts of Norway, in spite of a very strong population growth in this region. She, and several of the other interviewees, thinks the good public transport system in Oslo is a part of the explanation of this.

Helle thinks the establishment of the airport rail line to Gardermoen has been important for Lillestrøm as a sub-center of Greater Oslo. Now, it takes only 11 minutes by train from Lillestrøm to Oslo. Schlaupitz also mentions the Gardermoen train.

On the negative side, Helle points to the fact that the main road southward from Oslo has been improved to motorway standard while no improvement whatsoever has been made to the public transport services in this corridor. The only public transport improvements that have taken place in Akershus have come as infrastructure where the main purpose has been to facilitate air travel, Helle says. The rail lines have not obtained the necessary national-government funding. According to Helle, this is especially worrying in the light of a projected population increase of 120 000 inhabitants in Akershus during the next years, most of whom will be working in Oslo. This view is shared by Schlaupitz, who is worried by the fact that many settlements in Akershus still have poor public transport access. Torheim refers to the still growing car traffic, especially in the surrounding municipalities, and considers this to be partly due to higher affluence levels, but he thinks lack of adequate development of the railway services is also an important cause. Torheim says that there are bottlenecks on the stretches between Asker and Oslo and southward from Oslo. Helle, as well, thinks that the development of additional tracks on the western railroad line between Asker and Skøyen has taken far too long time. Jensen thinks that the subsidizing of Oslo's public transport from the state has been far to low and prevented a desirable upgrading and increase in the level of services from taking place.

Brendemoen, Jensen, Schlaupitz and de Vibe think the construction of *bike paths* could have been more ambitious. Jensen's major dissatisfaction with the development during the period is actually the poor facilitation for walking and

biking. Although an extensive plan for bike path construction was made in the 1980s, very little of this has been implemented. In Jensen's view, insufficient funding is part of the explanation, but he also thinks the bike paths that have been constructed have been of a too high technical standard. Within the allocated budgets it has therefore been possible to build only a relatively low number of kilometers. Schlaupitz, as well, thinks the really negative trait of development, seen from a sustainability perspective, is the lack of accessibility improvement for pedestrians and bicyclists. Within the municipality of Oslo, the bicycle could be able to compete with the car in terms of travel time, he says, but the routes are often filled with obstacles and exposed to risk of accidents.

Conservative politician Grete Horntvedt (previous leader of the Standing Committee on Urban Development in the municipality of Oslo and Commissioner for Urban Development) thinks there has been some improvement in the bike path network of Oslo during the past 20 years, and especially she holds that the number of bicyclists has increased. Yet, she admits that the facilitation for bike travel in Oslo is way below that in Danish cities.

As to the *road construction*, Elvestuen and Jensen look mainly positively on the highway development that has taken place in Oslo during the recent couple of decades. Although he thinks there has been a skewed balance between investments in roads and public transport at a regional scale, Elvestuen considers the balance to be pretty good within the municipality of Oslo. Elvestuen and Jensen both emphasize the fact that the new roads have led traffic out of the inner-eastern districts of Oslo and made these areas and the city center more attractive places to live. For the city center of Oslo, most of the road development has been positive, according to Elvestuen. Jensen also says that the road building has facilitated free choices on the jobs and housing market within a larger geographic region – a fact that he seems to appreciate.

Schlaupitz does not think the extensive road development in the early 1990s was merely negative to the environment. Some of it was necessary due to the land use policy pursued in Akershus. It also led to several local environmental benefits in Oslo. As a representative of the Nature Conservation Association, Schlaupitz here clearly takes not only global, but local environmental impacts into considerations. One may still ask if such local improvements could not have been obtained by building tunnels without increasing the capacity of the road network. Schlaupitz admits that the increased road capacity has reduced the generalized travel costs of the car mode, and thus facilitated travel by car. Travel times by car have been reduced – at least outside the peak period. Schlaupitz therefore would have preferred many of the large road development schemes not to be built. He also says that the road development might not have been necessary if a more transport-reducing land use policy had been followed.

De Vibe would also have preferred, seen from a sustainability perspective, a lower extent of road development than what has actually taken place (e.g. road capacity increases of the main roads southward and westward from Oslo). In Torheim's ironic words, the road builders have made great efforts: the "Oslo Package 3" implies that a new large motorway will be built in the western transport corridor of Oslo which, according to Torheim, will result in a 25 % increase in car traffic despite political wishes for a completely different traffic development.

Summing up, the interviewees generally consider that the development of public transport services in Oslo have been largely favorable, seen from a sustainability perspective, but less so in the county of Akershus. Road construction has had some positive local environmental effects appreciated by the interviewees, in particular in the municipality of Oslo, but has at the same time increased the road capacity in such a way that a continual, environmentally unsustainable growth in car traffic will be facilitated. Facilitation of bike travel has had very low ambitions, a fact regretted by several interviewees.

As emphasized by Dahl, transport infrastructure development and transport policies pursued in the region have been responsive to the sustainability challenges to a far lesser extent than has the spatial urban development. Torheim too considers that the sustainability goals have been followed to a higher extent within land use policy than within transport policy. Dahl thinks the policies within these two sectors pull in different directions – towards as well as away from the sustainability targets. Politicians in Oslo as well as Akershus have repeatedly adopted the goal that the growth in transport is to take place as public transport. But this is not the way that things have developed, according to Dahl. At least, the result we can see is a great increase in (car) traffic. 'So here they talk and say a number of positive things and do something quite different.' Although some things develop in a positive direction, there are too many that don't. Dahl thinks that the idea of creating an Oslo Package 3 is obviously reasonable, but in Dahl's view, the contents of the package are not good. The good thing is that toll revenues can now be used to cover operational costs of public transport. But according to Dahl, it is a 'completely wrong thing to go for some of the large road projects. Everybody knows that, but no-one will admit it. So we know that it will be this way. And there will be more car traffic.'

## 5.4 Interpretations of sustainable development

**The concept of sustainable development**

Since the report from the UN World Commission on Environment and Development (the Brundtland Commission) was published in 1987, the concept of sustainable development has become a mandatory part of the vocabulary of politicians, administrators and planners. It has become virtually politically impossible not to be a supporter of a sustainable development. Given this, there is no surprise that interpretations of the concept vary among our interviewees.

All of the interviewees interpret environmental protection to be an important part of the concept sustainable development. Several also add economic and social dimensions. None of the interviewees speak about the concept in merely social and/or economical terms.

Three of the Oslo interviewees, Helle, Elvestuen and Dahl, speak about the concept of sustainability mostly in *environmental* terms. Elvestuen states that the concept of sustainable development is quite watered out and that its' vagueness makes it difficult to measure whether you have achieved a sustainable development.

Some interviewees combine a focus on environmental sustainability with concerns about meeting the basic *needs of people in poor countries*. Jensen speaks mostly about sustainable development in terms of humanity and resource management on a global scale. One should try to come closer to a sort of ecological balance and to make the world less unjust, Jensen says, and indicates that you sometimes must do

something that is less ecologically sustainable in order to provide preconditions for a later more environmentally sound practice. Jensen considers that combating poverty is a precondition for a transition to environmentally sustainable practices but does not, however, say anything about how this translates into the context of the affluent Oslo region.

Schlaupitz has a similar perspective when he talks about the global dimension of social equity. However, Schlaupitz also talks about reducing resource consumption among inhabitants in rich countries.

Schlaupitz is also one of the three Oslo interviewees who state that the concept of sustainable development includes an *environmental dimension as well as social and economical dimensions*. Schlaupitz, Madsen and Torheim all talk about an integration of environmental, economic and social dimensions of sustainability. As the only Oslo interviewee, Torheim states that his institution (the Ministry of the Environment) has an official definition of sustainability. The conceptions of these three interviewees represents a broad view on sustainability including the interests of population groups suffering from existing environmental problems in cities.

Two of the Oslo interviewees, Brendemoen and Knut O. Gabestad (the latter being Director of the Agency for Road and Transport in the municipality of Oslo) speak of sustainability mainly in *economical* terms. Interestingly, both these interviewees are civil servants in transportation sector agencies. Gabestad interprets sustainable development as facilitating that future generations can be better off and conceives environmental sustainability as a side-condition in relation to a basic objective of economic growth. Brendemoen thinks the notion of sustainability basically means that you can go on doing the things that you do, if not eternally, then at least for a long time. The concept includes the possibility of mitigation measures and invention of new solutions. If you exploit a resource, this is acceptable as long as you manage to find a new resource that can substitute for the first one. Brendemoen emphasizes that her personal interpretation of sustainability may differ from the interpretations among other people in the Ministry of Transport, where there is no official 'canon' interpretation. Brendemoen's interpretation of the general concept of sustainability is in line with what has been termed a '(moderately) weak sustainability' (Tengstrøm, 1999:8), as distinct from 'very weak'. '(moderately) strong' and 'very strong' sustainability. Her use of the concept has also much in common with an ecological modernization view. In terms of interests, she represents the developed countries and those interests generally favored by an ecological modernization perspective.

The remaining two interviewees say very little about the concept of sustainability, apart from pointing at efficient use of resources as one of its components.

As can be seen from the above, there is no single dominant perspective among the Oslo interviewees as regards the interpretation of the concept of sustainable development. Several of the Oslo interviewees focus on utilizing resources efficiently in a long-term perspective. One of the interviewees talks a lot about the conditions of people in the south, however without reflecting on what the vulnerability of these people might mean in terms of global distribution. Another interviewee talks quite a lot about the social dimension. Even though two of the interviewees focus on economical issues – one of them especially eager to promote growth - the competitiveness of cities is not mentioned. It should still be borne in mind that the perspective of politicians from the municipalities outside Oslo is

missing, as the only politician from outside Oslo included among our interviewees represents the county of Akershus and not any of the separate municipalities.

**Sustainability challenges and goals**

The interviewees express diverging views as regards what elements of urban development are most important to address (e.g. the building stock, the transport infrastructure, or the green structure) in response to sustainability challenges and which goals should be given priority. Yet, all the Oslo interviewees mention both *building stock* and *transport infrastructure* as main issues in sustainable urban spatial development. *Energy use* and *reduction of greenhouse gas emissions* are in focus in all interviews, and all of the interviewees have the understanding that *densification* is a relevant strategy for reducing *car travel*. As Torheim puts it: minimizing land consumption and transport are main principles in order to reduce pollution and emissions.

Several interviewees talk about public transport services and limiting car driving. Reducing the amount of transport and changing the shares of different modes are emphasized. Jensen recommends that urban development should be located to areas close to public transport nodes in order to promote this mode of travel. As the only one among the interviewees Brendemoen points at vehicles based on renewable or environmentally friendly energy as a measure to obtain sustainable mobility.

None of the Oslo interviewees focuses solely on the building stock. Contrary to the Copenhagen interviewees, where no-one focuses on the green structure, in Oslo three of the interviewees, Madsen, Horntvedt and Elvestuen, talk about this. Madsen mentions how the city should have room for green outdoor areas and public access to the river. Horntvedt is concerned about protecting intra-urban green areas, historical buildings and built environments. Elvestuen points at protecting the Marka areas as well as increasing biodiversity within the urban area demarcation.

Gabestad, Torheim and Madsen talk about *economical* aspects. The city should be attractive to live in and to visit, Torheim says, and assumes that this will increase the city's economic competitiveness. According to Gabestad, one should obtain an urban development that creates economic growth while keeping the need for transport constant or reducing it. Madsen states that a relatively high density and good public transport accessibility contributes to the economic viability of development projects.

As the only Oslo interviewees Madsen and de Vibe emphasize social sustainability. Madsen talks about an integration of environmental, economic and social dimensions of sustainability in an urban development project like Nydalen. As a representative for a private contractor Madsen is not blind to the economical perspectives and says that an integration of dwellings, workplaces and service facilities also makes a project more economically favorable to the developers.

De Vibe mentions the concerns of future generations as important, and specifically dissociates herself from interpretations giving higher priority to esthetic considerations than to the conditions for future inhabitants of the planet. Besides this, de Vibe mentions social cohesion as an equally important concern, understood as a balanced social, age-wise and socioeconomic composition of inhabitants, i.e. to avoid segregation.

None of the Oslo interviewees mentions a car free city and none of them specifically mentions economic growth or the question of whether growth can be decoupled from

environmental degradation. However, as can be seen from the list of interviewees the Oslo interviewees do not include mayors from local municipalities, which means that the perspectives from these are missing.

Three of the Oslo interviewees, Gabestad, Torheim and Madsen, can be said to represent *a broad view* on the requirements of a sustainable urban development where economical aspects and competitiveness are included. This, however, does not mean that these interviewees have no understanding of environmental aspects. A majority of the Oslo interviewees focus mostly on *environmental issues* as the key challenges to address in order to secure a more sustainable urban development.

## 5.5 Land use priorities

The interviewees generally endorse the compact city as a model for future urban development in Oslo Metropolitan Area. Many also advocate a location of a high proportion of future development close to the city center of Oslo. There are, however, diverging opinions on this, and some interviewees prefer a polycentric development with a high share of new dwellings and workplaces located to local centers in the outer parts of the region. There are also different opinions on the issue of mixing different urban functions within the same area, notably dwellings and workplaces. Some interviewees think that this should mainly take place in the central parts of the region, but others advocate mixed-use development also in the urban settlements in the outer parts of the metropolitan area.

**Support of the compact city model**

Ten of the Oslo interviewees explicitly say they support a compact urban development in central areas of Oslo (Torheim, Brendemoen, de Vibe, Gabestad, Dahl, Madsen, Schlaupitz, Elvestuen, Helle and Horntvedt). Six (Elvestuen, Dahl, Horntvedt, Torheim, de Vibe and Gabestad) also talk about providing a sufficient amount of green areas for the growing inner-city population, keeping the Marka demarcation line and/or taking care of historic buildings and of the aesthetics.

Jensen is the only interviewee who states that he thinks the potential for densification within the municipality of Oslo will be exhausted within not too long – say 40 – 50 years.

Gabestad says that the municipal authorities' strong prioritization of inner-city residential development is motivated by an aim of reducing the need for transportation (in particular commuting). Madsen also supports urban densification and is skeptical to the "green city" model for urban sustainability based on local self-sufficiency. Such low-density development would generally require very costly infrastructure and would in practice result in neighborhoods attainable only for affluent people, he says. Torheim thinks concerns of biodiversity, protection of productive agricultural soil, resource consumption and traffic accidents would make a car-based and sprawling urban development undesirable even if cars did not emit any pollutants. Torheim considers this an important reason for urban densification and contrasts compact urban development with the situation in some sprawling cities internationally where two thirds of the built-up area are used for roads and parking. Perhaps needless to say, Torheim does not consider such urban development favorable.

Torheim at the same time says that densification must be accompanied by protection of urban green areas and measures to limit car usage – otherwise the dense city will be in lack of local environmental qualities. Similarly, Schlaupitz emphasizes that densification in the inner areas of Oslo should take place on brownfield sites; otherwise there will be conflicts with nature conservation and outdoor recreation interests.

Jensen also looks positively on the transformation of inner-city brownfield areas (derelict industrial areas and harbor areas) into new housing or commercial areas, although he does not want a too strong concentration of future urban development to the inner parts of the region.

Although Horntvedt thinks that many people would like to move to single-family houses in the Marka forests if a development like this was realized, she does not recommend such an urban development strategy. Among other things, she thinks this would be a very costly form of urban development due to the need for establishing new infrastructure. She also thinks the transport infrastructure within the existing urban area would be overloaded if new urban districts were added in the Marka areas.

A large majority of the Oslo interviewees (Jensen, De Vibe, Brendemoen, Torheim, Horntvedt, Helle, Schlaupitz (on behalf of other members of the Nature Conservation Association) and Dahl) also support locating and densification *close to public transport nodes*. As an example, de Vibe mentions the Grefsen station area, where she is in favor of quite dense development in spite of neighbor protests. She says that the neighbors must accept that the planned new development will block some of their view. Schlaupitz himself prefers densification to take place mainly close to the city center of Oslo, in particular as regards workplaces, but tells that some other members of his organization would rather prefer to locate more development to public transport nodes in the outer parts of the region than close to downtown Oslo.

**Polycentric or monocentric?**

Whereas the interviewees share a common support of densification as a general strategy for urban development in Oslo Metropolitan Area, there are more diverging views about how new dwellings and workplaces should be distributed between the municipality of Oslo and municipalities in the county of Akershus.

Most of the Oslo interviewees speak in favor of *densification close to the city center of Oslo*. No-one speaks against it. De Vibe and Gabestad have positive views on Oslo's high proportion of the total population growth in Oslo and Akershus. Schlaupitz, Dahl and Madsen talk about the Grorud Valley as an important area for future urban transformation and densification. Schlaupitz also thinks more attention should be drawn to the large densification potential and the low site utilization in the western part of Oslo. He does not want to erase the existing built environment in these areas, but he still thinks the possibility of densification in these districts should be utilized more actively also because the public transport provision in these areas is good (for instance compared to Akershus). Torheim and Schlaupitz emphasize that large and highly specialized workplaces should be located in the central part of the metropolitan area. For housing development and less specialized workplaces, however, Schlaupitz thinks densification may also take place outside downtown and the major nodes. According to Schlaupitz there are diverging views in the Nature Conservation Association on the shares of densification to take place in Inner Oslo

compared to outer-area transit nodes, but there is general agreement on densification as a main strategy.

While there is a widespread opinion that the densification process within the municipality of Oslo should go on, there is also a commonly held opinion that the core municipality should not dramatically increase its share of the total development within the region. Eight of the Oslo interviewees (Torheim, Brendemoen, Dahl, de Vibe, Helle, Elvestuen, Horntvedt and Jensen) thus support 'decentralized densification' as well as centralized. They thus go for a *polycentric* (or multinuclear) metropolitan-level development.

According to Helle, there will be a need for considerable residential development in Akershus (as well as in Oslo). He realizes that it might be desirable, seen from the perspective of transport minimizing, to locate a high proportion of the total number of new dwellings in Oslo and Akershus to the municipality of Oslo. However, Helle thinks that esthetical and local environmental considerations speak against a too strong, high-rise based densification in Oslo. Although being positive to a substantial residential development in Oslo, he does not think that Oslo should build a higher number of new dwellings than presupposed in its latest municipal plan.

Helle also wants to increase Akershus' proportion of the new workplaces in the region, with a corresponding reduction of the number of new workplaces in Oslo. He believes that this will result in reduced transport and traffic. He also advocates out-location of workplaces from the inner parts of Oslo to Akershus municipalities, as in the case of the relocation of the Postal distribution center from Oslo to Lørenskog. According to Helle, there will be a turnover of employees so that the decentralized workplaces will by and large recruit their employees locally (within 5 – 8 years). He prefers such decentralization regardless of workplace type (e.g. in terms of the degree of specialization). Helle says that traffic surveying has shown that the number of suburban residents who commute through Oslo to suburban workplaces at the opposite side is relatively modest.

Thus, what Helle recommends is 'decentralized concentration', both as regards dwellings and workplaces. At a local scale, Helle wants to locate new residences and workplaces within the demarcations of existing urban settlements and with good public transport accessibility. In the outer parts of the region, the urban settlements are generally smaller and with much poorer internal public transport services than in the centers that are part of Greater Oslo (like Lillestrøm). Helle therefore thinks that the need for locating facilities (sports and leisure facilities as well as workplaces and stores) close to the municipal centers is even higher in the outer municipalities of Akershus than in Oslo's neighbor municipalities.

Helle does not recommend workplace development in any small settlement of Akershus. He says that employment growth should be concentrated to a limited number of centers such as Lillestrøm, Lørenskog and Jessheim, close to main public transport stops. Or, if workplaces are still established at a distance from such stops (e.g. in the case of the Postal center in Lørenskog), public transport lines should be extended to reach these new workplaces.

Torheim, de Vibe, Brendemoen, Dahl and Schlaupitz all think that densification and development should take place close to nodes in the public transport system and in main public transport corridors (as well as in the inner city) or in areas where such are to be established. Brendemoen says that much of the landscape in these transport

corridors are already quite spoiled ('it is already completely Texas there'). She mentions the corridor from Oslo to Drammen as an example of a corridor where residential as well as workplace development might take place.

Torheim points at Copenhagen's Finger Plan as an ideal and says that the railroad should be the backbone of a polycentric urban development e.g. in Lillestrøm. However, as mentioned above, he underlines that large and highly specialized workplaces should be located in the central part of the metropolitan area.

Torheim is first and foremost in favor of polycentric regions at a high geographical scale. He recommends strengthening towns like Hamar and Lillehammer as independent centers and says that this is the geographical level on which the thought of polycentric settlement patterns mainly applies. There is, according to Torheim, a need for critical mass. He is therefore skeptical to the location of a new research park outside of Lillestrøm, in his view this concentration of research and education facilities, public services and commercial businesses should rather have been located centrally within the region, at least integrated in the central area of Lillestrøm. This view is shared by Horntvedt and de Vibe, who both prefer the polycentric development to take place in a limited number of existing settlements. Horntvedt mentions Kolbotn, Ski and Lillestrøm and Jessheim as relevant nodes. Outside the selected nodes, development should be subdued, according to Horntvedt. De Vibe mentions larger regional nodes (such as Drammen, Ski and Lillestrøm) as alternatives to Oslo. She does not consider small municipal centers like Nittedal to be relevant parts of such polycentric development. Similarly, Madsen does not think it would be possible to develop a district like Nydalen on the urban periphery and is generally skeptical to greenfield development, not the least due to the transport consequences of such development.

Dahl points at development possibilities in existing urban settlements around major public transport nodes, notably Sandvika, Asker, Kolbotn, Lillestrøm, Ski, the center of Asker and Jessheim. He also looks positively on the development on the previous airport area of Fornebu, provided that a radically improved public transport connection is established. Elvestuen too prefers a multinuclear structure based on existing towns and urban settlements, such as Lillestrøm, Sandvika and Drammen. He is against developing new settlements on previously undeveloped land. Elvestuen thinks locating more workplaces to the centers of the multinuclear structure will be positive, among other things in order to utilize vacant train capacity in the opposite directions of the traditional morning and afternoon rush. Within the municipality of Oslo, Elvestuen points at the new urban rail ring as a way to promote a high share of public transport riders among employees outside the very downtown area. He thinks a similar high-class public transport service may facilitate a high proportion of public transport also among employees working in the outer nuclei of a multinuclear regional settlement structure. However, Elvestuen is clearly negative to the establishment of high-specialized workplaces in peripheral settlements without high accessibility by public transport.

Jensen also talks much about the development of nodes in the outer areas of the municipality of Oslo and in the neighboring municipalities. Jensen considers it necessary to balance the concerns for densification against limitations of density posed by concerns for quality of life. As he thinks the densification in the inner city will come to an end in a nearby future, he is more enthusiastic about densification around nodes in the suburban districts of the municipality of Oslo than about inner-

city regeneration. According to Jensen further growth in the region should then take place in secondary centers like Drammen. He mentions Ebenezer Howard's model of mutually connected garden cities as an ideal still worthwhile to pursue, possibly in combination with a linear urban model. Jensen speaks in positive terms about the 'commercial development corridors' that have been established along the main transport arteries in different directions from the metropolitan area, especially the southern corridor (following the motorway E18) stretching from the southern suburbs of Oslo to neighbor municipalities of Oppegård and Ski. Jensen is clearly negative towards the establishment of workplace concentrations at outer-area locations far away from any public transport nodes and he admits that the widespread ideal among planners in the 1960's of creating district-level jobs-housing balance did not lead to reduced travel.

At a higher geographical scale, Jensen thinks the growth currently taking place in the Oslo region might rather be channeled to medium-sized towns in other parts of the country.

As the only Oslo interviewee Gabestad talks about the 'shopping structure'. He looks positively on the concentration of niche and special-commodity shops in the inner city and thinks that shops selling commodities that are too heavy to carry home (e.g. furniture) should rather be located to the outer areas. Like many other interviewees, he is critical to the recent relocations of some large companies with many employees to outer-area locations with poor public transport access.

**Mixed-use**

Four of the Oslo interviewees talk, positively, about mixed land use. Elvestuen supports integration of housing and workplaces and Madsen strongly emphasizes this as a measure to promote sustainability. The property development company he represents, Avantor, had to struggle with the municipal planning agency in order to have the original, monofunctional (workplaces only) land use plan changed into a mixed-use plan. Elvestuen and Madsen both refer to mixed-use primarily as a development principle for the inner city. Jensen speaks in positive terms about mixed-use development not only in the inner city, but also in suburban centers and at nodes in the outer parts of the region

De Vibe is also positive to mixed-use. However, her criteria seem to be mostly related to local environmental nuisances. She does not mention the different transport impacts of mixed-use in central and peripheral areas (cf. the Dutch ABC principles) in this connection. For de Vibe, mixed-use appears to be mainly about ensuring a good and varied city with urban life at different times of the day.

At the scale of the individual urban settlements of Akershus, Helle advocates a transition toward a higher mix of land uses than today, where many of these settlements are relatively monofunctional residential villages.

**Growth in population and building stock**

None of the Oslo interviewees regard growth in the population and/or the building stock as a problem. The growth in this area is taken as a given fact for most of the interviewees. Torheim still expresses some general concerns about consumerism. According to Torheim, the economic bonanza (which was still high at the time of the interview) is in itself an important driving force of a development in a direction away from the sustainability goals.

Dahl considers it his task to make the best of the growth in the building stock. De Vibe says that there is a broad consensus among the municipal politicians that Oslo should facilitate the forecasted population growth. She also does not think that the environmental organizations have taken any standpoint against the growth.

Schlaupitz and Helle both consider the population growth in Oslo and Akershus as acceptable, as long as it does not lead to decline in the other Norwegian urban regions. According to Schlaupitz, the Nature Conservation Association is influenced by the prevailing view that there will be considerable growth in the Oslo region, and they therefore do not consider it realistic to deny the need for more land for urban development. However, Schlaupitz is the only interviewee asking how much residential floor space one really needs. He points to the fact that increased purchasing power enables a steadily growing level of consumption.

In Helle's opinion, the fact that a large part of foreign immigrants settle in Oslo can explain and justify some of the population growth in the capital area.

Elvestuen is the only interviewee who wants to disperse the current growth in Oslo and Akershus to a higher extent to other parts of southeastern Norway. These growth relief areas should be connected to Oslo with high-class railroad services, he says. Combined with Elvestuen's positive view of Oslo getting a high proportion of the growth in Oslo and Akershus, this implies that he thinks reduced growth should in particular take place in Akershus. Such reduction will probably also be favorable in terms of reducing (car) transport and its emissions, but this is not mentioned explicitly by Elvestuen. Rather, it seems like he wants to relieve the total growth pressure on the metropolitan area for local environmental reasons, while recognizing that just shifting growth to Akershus in the form of suburban sprawl will not be environmentally sustainable.

## 5.6 Transport policy priorities

The majority among the interviewees consider increasing mobility as either positive or an unavoidable fact. For these interviewees, sustainable transport strategies are about channeling the growing amount of transport to environmentally friendly modes (notably public transport) to as high extent as possible. There are, however, also some interviewees who question the desirability of an increasing amount of transport. These interviewees advocate policy measures that can contribute to reduce or level out the growth in mobility, at least at an intra-regional scale. Although much focused on in the general debate on sustainable mobility, only a few interviewees mention environmentally friendly vehicle technology as a solution to urban sustainability challenges, and only in combination with other measures.

Six Oslo interviewees are skeptical towards increased road construction. Four are positive. Six express support to reduced parking availability and five mention road pricing as an effective means. All of the interviewees support investments in public transport services. Seven of the interviewees emphasize improvements in railroad services.

**Mobility increase – desirable or not?**

Gabestad and Jensen both support increased mobility. According to Gabestad, enhancing mobility is an important way of *contributing to economic growth*, which is part of the sustainability concept as he sees it. On the other hand, Gabestad says, it is

necessary to 'repair' the negative environmental impacts often accompanying increased mobility and mobility enhancement, and environmental concerns should therefore go 'hand in hand' with mobility enhancement when developing transport infrastructure. Jensen is positive towards the fact that the total increase in infrastructure capacity (roads plus public transport) has enabled people to choose among jobs more freely.

Several of the other interviewees seem to think that there is an *unavoidable rise* in the amount of mobility – but that one should try to limit this rise through the use of different means. Horntvedt, for instance, thinks that growth in mobility cannot be accommodated through increasing volumes of car traffic. Helle thinks growth in the amount of transport will be an inevitable result of the expected population growth of 240 000 inhabitants for Oslo and Akershus together within the year 2020. Dahl says: 'You have to find the right ways of meeting the increased need for mobility – for such a need seems to exist.'

While sharing the aim of reducing the negative impacts of mobility, Torheim, Brendemoen and de Vibe also support *limitations on the level of mobility* as a measure to meet sustainability requirements. As the only interviewee de Vibe mentions the aims of the National Policy Provisions for Coordinated Land Use and Transport Planning of limiting the need for transport and increasing the shares of public and non-motorized transport as important objectives. Brendemoen thinks demand management is generally more important than transport infrastructure investments. Schlaupitz talks about decreasing the transport with private cars. None of the Oslo interviewees, however, talk about actively decreasing the total amount of transport.

**Technical fixes?**

Technical solutions to the environmental problems of mobility are mentioned by only two Oslo interviewees: Brendemoen supports more environmentally friendly vehicle technology. Elvestuen mentions carbon neutral fuels for buses (biofuels, cf. above) as a recommended solution. Notably, both Brendemoen and Elvestuen advocate several other strategies to reduce the environmental impacts of urban transport. Thus, none of the interviewees express a one-sided faith in vehicle technology solutions as a way to sustainable mobility.

**Promoting environmentally friendly modes of transport**

Improved public transport service is a goal for all of the Oslo interviewees. A large majority among the interviewees mention modal split changes from car to public transport as a very important – often the main - concern. (De Vibe, Torheim, Brendemoen, Dahl, Jensen, Elvestuen, Gabestad, Helle, Horntvedt, Schlaupitz, Madsen). Dahl mentions and supports the politically adopted goal of letting public transport take all future growth in passenger transport, and points to the necessity of increasing the capacity of the public transport system in order to prepare it for this task. Madsen mentions good accessibility by public transport as an important quality of the Nydalen district. Gabestad emphasizes measures to encourage people to choose public transport rather than the car as a way of preventing increased mobility from creating adverse environmental impacts. The demand management measures advocated by Brendemoen must also be seen as a tool for shifting car drivers over to other modes of travel.

Jensen too is strongly in favor of limiting car traffic and seems to consider it possible to change the modal split, since he supports transit and walk/bike improvements to counterweigh the growth in car traffic facilitated by the road construction that he also supports.

*Proposals for public transport improvements.* Eight interviewees specifically emphasize improving or building new railroad connections as very important. (Horntvedt, Torheim, De Vibe, Dahl, Jensen, Elvestuen, Schlaupitz and Helle). Torheim thinks rail-based public transport must be the backbone transport infrastructure in southeastern Norway.

Helle states that the population growth in Oslo and Akershus in itself implies that traffic will increase as a higher number of people will have a need for moving around, also in their leisure time. This will require substantial improvements in the public transport system (especially railway and metro), both in the form of new tracks and lines and by increasing the number of trains.

De Vibe and Dahl mention the need for a new east-west rail line along the bottom of the Oslo Fjord in combination with the planned rail line to the previous airport of Fornebu, which could ensure a connection with no need for changing between different lines. Besides the Fjord tram line, de Vibe mentions the need to build additional tracks on rail lines where the capacity is now too low. De Vibe considers improved public transport as the most effective response to congestion problems.

Several interviewees point at the need for better public transport accessibility to the workplace areas at the bottom of the Grorud valley, where considerable densification with a broader range of urban functions is expected to take place in the future. Dahl mentions the need for a new railroad station in Groruddalen at Alnabru (which he believes will come in relatively few years), and a metro or combi rail line along the bottom of the Grorud valley. Horntvedt thinks that in the eastern part of Oslo a new cross-connecting metro line should be built across the Grorud valley and perhaps an extension of the Ellingsrud line to the Akershus hospital in Lørenskog. Schlaupitz mentions a need for transit connections across existing public transport corridors and a connection across the Grorud Valley as a concrete example.

Elvestuen thinks there is a need for more radical thinking about rail services and would like to remove the other trains from the tracks of the local trains, thus opening an opportunity to run local trains with 15 minutes intervals, just like the metro lines within the municipality of Oslo. As long as the local trains depart only twice an hour, the railroad lines through, e.g., the Grorud valley are not able to attract new dense development.

Apart from improvements in the Grorud valley, Schlaupitz calls for better connections from the inner eastern to the inner western parts of Oslo and better railway services Oslo-Ski and Oslo-Lørenskog. Horntvedt thinks that a faster train connection should be built from Oslo to northwestern neighboring towns (the Ringerike rail connection).

Whereas most of the interviews focus on rail when they are talking about public transport, Dahl also mentions a need for extended bus services in particular in the form of more thoroughfare bus lines on separate lanes through the inner city of Oslo.

The rest of the Oslo interviewees (Jensen, Madsen, Gabestad and Brendemoen) also support investments in public transport. Brendemoen especially supports fundings to

cover operational costs in the bus system and Jensen stresses the need to regulate traffic lights in such a way that public transport vehicles are automatically given green light when approaching a crossing.

Gabestad, Horntvedt, Elvestuen and Jensen also mention the need to improve the conditions for *pedestrians and bicyclists.*

**Road construction – solution or part of the problem?**

Four of the interviewees are, more or less, positive to road capacity increases. The majority among the interviewees are, however, skeptical towards building one's way out of congestions by means of road construction, and six explicitly express a negative opinion about road capacity increases.

Gabestad talks about a necessity to improve road infrastructure in order to relieve goods transport from congestion. He thinks delays in queues represent significant and undesirable costs for trade and business. Gabestad admits that a dilemma exists, as there is a risk that road capacity increases aiming to improve travel speed for trucks will attract more private car to these roads, resulting in the build of congestion once again and worsened travel speeds for goods transport. Gabestad mentions the view expressed by some agents that new motorways could be built without grave environmental consequences as long as they are built underground, i.e. as tunnels. He seems to be undecided on whether or not such 'tunnel-based predict and provide' is a good idea.

Jensen considers the fact that the road construction (which in his view has had as its most important function to relieve inner-city environments from through traffic) has resulted in increased traffic to be an acceptable side effect. Elvestuen considers the Oslo Package 3 as a contribution to such protection of local neighborhoods from through traffic.

Helle (as well as his party, Socialist Left Party) supports the Oslo Package 3 and considers some of the road development of the Package to be favorable to the local urban environment. For example, building a new road tunnel crossing under Sandvika will re-establish the contact between the town center and the Oslo Fjord. Helle admits that it is not a favorable decision, seen from a sustainability perspective, to build a new motorway tunnel from Sandvika to Oslo (which is one of the other road schemes included in the Oslo Package 3). Helle says that the package will not imply as large an increase in road capacity as has been said by some critics, although capacity increase will take place in some corridors. He emphasizes as an important achievement that it has now been accepted to spend road toll revenues to cover operation costs for public transport. An important case in point for Helle is that the political situation may change within the scheduled time for constructing the motorway schemes included in Oslo Package 3. If the politicians at that time want to give higher priority to sustainability, they will be free to do so. The environmentally positive elements of the Oslo Package 3 (notability the opening for spending road toll revenues to cover operational costs of public transport) have, on the other hand, been implemented already from the outset and do not – like most road development included in the package – depend on the prioritizations of future politicians.

However, to most of the other interviewees, further road capacity increases are judged in less positive terms. Indeed, expansion of the road capacity is the issue most often mentioned by the interviewees as a problem in current transport policy and transport infrastructure development. The Oslo Package 3 therefore has several

opponents among the interviewees. Brendemoen is highly skeptical to road capacity increases. Personally she disagrees that this is an 'environmental package'. Brendemoen stresses that this is her personal view as a citizen o f Oslo, and that it is not the view of the Ministry. Torheim says that road building in larger cities is not important in order to increase the cities' economic attractiveness, and that you cannot pave your way out of congestion in such cities. De Vibe and Dahl do not believe in road building to solve congestion problems either. Dahl mentions the competing view that road capacity should increase along with public transport improvement, but dissociates himself from that view. Horntvedt thinks road construction should be held back for environmental reasons, but not be completely dropped. In her view, some road development is necessary in order to avoid too much congestion.

Madsen states that his company, Avantor, argued against the Highway directorate and Oslo's municipal authorities in order to reduce what he considered to be an excessively high-capacity proposed access road to Nydalen from Ring Road 3.

Not surprisingly, the Nature Conservation Association representative Schlaupitz is also negative to road capacity increases, for example in the corridors westward and southward from Oslo. More specifically, he fears that the old roads will be kept open after the construction of new motorways (which are themselves wider than the original roads), so that there will be a very substantial increase in capacity. In Akershus, the Nature Conservation Association fights against several road projects. These roads and road extensions have partly been justified by traffic safety concerns, partly by a wish to reduce congestion on Fridays and Sundays when people drive to and from second homes.

**Restrictions on the use of cars in urban areas**

Elvestuen, Torheim, Gabestad , Jensen, Madsen and Schlaupitz also support *reduced parking availability* (and/or parking fees) as relevant instruments to reduce car traffic. At Nydalen, Madsen states, there is only one parking place per five employees, evidently as a result of pressure from Avantor in negotiations with the municipality. Madsen also says that parking place provision as low as one per fifty employees is relevant in the downtown area.

Helle, on the other hand, is positive to the establishment of park and ride facilities at the rail stations in Akershus. He does not discuss any conflicts between this strategy and a wish to utilize these central parts of the Akershus urban settlements for residential or workplace development.

Elvestuen also makes it clear that he is positive to building parking houses, although he does not want to locate them in the very center of Oslo. He still thinks there must be accessibility by car to downtown Oslo, and that this is favorable also for environmental reasons: In an environmental perspective, Elvestuen considers it important to keep downtown Oslo as the main commercial area of Eastern Norway. Gabestad and Helle also want to secure the admittance of cars downtown and in the harbor area, respectively.

Schlaupitz is generally positive to restrictions on auto use, including reduced parking availability. In his view, parking restrictions are necessary in order to obtain the desired results of workplace location at public transport nodes.

Torheim, Schlaupitz, Brendemoen, Jensen and Horntvedt support *road pricing.* Brendemoen seems to be particularly in favor of road pricing as a combined measure

to limit mobility in general and to promote a shift from car traffic to public and non-motorized traffic.

Jensen and Gabestad both look positively on conversion of road space from car traffic to buses, streetcars or bikes. On the other hand Gabestad considers this to be difficult in the inner city because the roads are too narrow and he does not want to totally exclude the cars from these streets.

**Growing car ownership – a problem or a given circumstance?**

None of the Oslo interviewees talk explicitly about the growth in car ownership rates. Three of the interviewees give statements, though, which can be interpreted in a way suggesting that they are critical to the growth in car ownership. Brendemoen is clearly critical to the growth in car traffic and thus, it can be assumed, to the growing car ownership rates. Elvestuen focuses on stating sustainability goals first and thereupon identifying the changes needed in order to reach these goals. This might suggest that he would also be willing to consider measures to curb the growth in car ownership. Madsen mentions that the development concept of Nydalen includes a carpooling scheme, and points at this as an environmental feature. Carpools are normally believed to reduce car ownership rates among their members, which is why this could be interpreted as a critical attitude towards growing car ownership rates.

## 5.7 Stakeholder influence

Several actors are mentioned by the Oslo interviewees as having influenced the development in a more or less sustainable direction. Below, we shall take a look at the roles of the following groups in supporting or counteracting a transport-reducing and less car-based urban development: commercial agents, local authorities, sector authorities within public administration, environmental organizations, other lobby organizations, and political parties. The influence of state-level policy instruments will be addressed in the last section of this sub-chapter.

**Commercial agents**

Among profit-oriented enterprises and corporations, some push, according to the interviewees, for a more compact and dense urban development whereas other push for outward urban expansion and a more fragmented pattern of development. Their roles in promoting different types of transport infrastructure also differ somewhat.

De Vibe states that representatives of the construction trade are often very active lobbyists, and usually they press for more dense development than recommended by the municipal planning agency. Private companies also often lobby for higher densities. According to de Vibe, several other developers, such as Avantor, are much more serious and take a broad social responsibility. The commercial agents arguing for higher densities also include companies such as IKEA and the large social housing developer OBOS. Horntvedt also mentions developers who want to exploit their building sites maximally as a group of actors that may threaten environmental qualities at a local scale although they do just the right thing seen from a macro-level environmental perspective. As Horntvedt sees it, these actors are primarily concerned about earning money, and their wish for high densities is not motivated by a goal of reducing car travel.

Madsen states that Avantor is one of the few development companies possessing sufficient resources to address the challenges in large urban transformation areas like

Nydalen. He thus seems to attribute the progressive role, seen from a sustainability perspective, of Avantor just as much to its size and market power as to the ideas and values of its managers. Smaller companies are not able to make the high investments necessary for purchasing and developing large areas like Nydalen in a comprehensive way.

De Vibe directs attention towards what she considers the ambiguous role of state-owned companies. Such companies are often perceived by other participants in the discussion as representing the government, but on the other hand they act like private, profit-seeking companies. This also applies to the Oslo Transit Authority, which has self-interest in economic gain from high-density development on a lid over the Majorstua station area. Horntvedt mentions the Harbor Agency as an actor that pursues its own narrow goals without taking broader societal concerns into consideration. More specifically, the Harbor Agency initially wants to avoid urban development on harborfront areas, but if such development is after all decided, it wants maximal density in order to get as much revenues as possible from the sales of building sites. Similarly, referring to the location of a new post terminal at Robsrud in Lørenskog, Torheim says that The Postal Agency and a number of other government-owned corporations do not mind adopted national policy goals, but choose the cheapest site without considering the environment and location policy. On the other hand, Torheim points at the State Railway Agency as promoters of a sustainable development as they can profit economically from promoting urban development on their areas.

De Vibe says that she has not encountered any commercial pushing for a more sprawling development – at least not within the municipality of Oslo, where sprawl would imply a highly controversial development in the Marka recreational forests. She thinks a commercial pressure for sprawl still exists in Akershus. In a similar vein, Schlaupitz thinks property developers are generally interested in urban densification, and often this results in a pressure for conversion of intra-urban green areas into building sites. He at the same time thinks that if land use had been up to the property developers, we would also see more scattered out-of-town commercial development.

Gabestad mentions commercial agents who prefer to move to very transport-generating locations as an example of actors trying to push the development in a direction that contributes to an imbalance between environmental and growth concerns. According to Gabestad, these companies do not pay much attention to the environmental consequences of the increased transportation resulting from their relocation to outer area sites with poor public transport accessibility. In line with this Helle describes how investors together with the landowner pushed in order to locate quite transport-intensive workplaces to a remote previous military camp (Lahaugmoen) in Skedsmo and how the owner of a regional builder's merchant warehouse and a land owner pushed to locate to a former factory site poorly served by public transport. The politicians did not want to miss the workplaces and allowed the development to take place. Torheim also mentions examples of municipalities having allowed sprawling development after pressure from (shopping center) developers.

Thus, the interviewees tell several stories about how land owners and investors sometimes put pressure on politicians in order to have plans adopted that will allow forms of land use that are less than optimal seen from a sustainability perspective.

Sometimes, this results in sprawl, but in the inner city of Oslo the pressure instead leads to loss of green space and poorer housing quality, especially for families with children.

**Local authorities**

The examples given by the interviewees indicate that the municipality of Oslo generally promotes a dense and concentrated urban development, whereas local authorities in suburban and outer-region municipalities often aim for a higher proportion of the total regional development in outer parts of the metropolitan area than what would be preferable from the perspective of reducing car travel. They are also prone to yield to pressure from companies wanting to locate at a higher distance from public transport nodes than presupposed in the regional plans.

Helle describes municipalities conducting land use planning without any view to regional concerns as a group of actors pulling in the opposite direction of sustainability. In his view, such a 'myopic' perspective is fostered by the increasing competition between municipalities for inward investments. Torheim also points at local politicians (especially in the outer parts of the metropolitan area, notably in the north-eastern part) as opponents of what he considers a sustainable urban development. Referring to a car-based development at Lahaugmoen, Torheim says that the municipality of Skedsmo seemed not to be aware of the nationally applied policy goals for minimizing transport. He raises similar criticism against the municipality of Asker regarding the establishment of the shopping mall Smart Club.

Torheim also calls attention to the ways in which political responsiveness to local voters can make up a pressure for more road development. For example, whereas some politicians in Oslo say that the city cannot digest any more traffic and therefore do not want to increase the capacity of the roads leading to the inner districts, a leading politician from a neighboring municipality says that he understands this, but he also has to be responsive to the wishes of his own voters. Being reluctant to more road development may therefore be a political drawback.

Madsen thinks that the politicians of Oslo have been generally positive toward densification, but their interest has mainly been focused on the central harbor front, with less interest in the transformation of old industrial areas a bit further away from downtown. The municipal authorities now recognize Nydalen as a success development, but they did not take any active role in creating this success.

**Sector authorities within public administration**

Regarding land use, Torheim points at the *agricultural authorities* (which have gradually become more concerned about obtaining more efficient land utilization) as promoters of a higher sustainability. Helle puts it a little different: national agricultural authorities (and their county-level agencies) often act in a way that puts obstacles to desirable urban densification projects. Such objections are contrary to the National Policy Provisions on Coordinated Land Use and Transport Planning (introduced in 1993), and Helle admits that the County Agricultural Committee during recent years has become less dogmatic in their defense of centrally located, small pieces of farmland encircled by urban land.

As opponents of what he considers a sustainable urban development, Torheim points at many central-government agencies (which give priority to cost minimizing within their own budgets without taking into consideration other sectors or objectives).

Horntvedt mentions the *Ministry of Finance* as a barrier against establishing a road pricing scheme (in terms of the use of toll revenues) that might be accepted among the voters.

According to Madsen, *national road planning authorities* (the Highway directorate and the Ministry of Transport) have tried to push the development of Nydalen in a less sustainable direction by demanding an overdimensioned road connection to the area. These plans were probably also backed by the municipal road agency, but nearly all other involved parties were against, according to Madsen. Schlaupitz says that the Highway directorate is split in its view on the need for more road construction in Oslo: some employees are dedicated road builders while others take a more balanced view. The latter group also includes the secretariat of the Oslo Package 3. Torheim points at a different role of the regional level of the Highway administration. Interestingly, the regional level of the Highway administration has often submitted formal objections (based on the National Policy Provisions for Coordinated Land Use and Transport Planning) against car-based municipal land use proposals. Torheim also calls attention to the fact that representatives from the Ministry of Transport are increasingly emphasizing the importance of transport-reducing land use, road pricing and parking policy. On the other hand, the Ministry of Transport wants to improve the trunk roads, and they are pushed by delegations from counties and municipalities who want a faster implementation of their desired projects. There is not any corresponding pressure to improve the rail lines.

According to Schlaupitz, the *professional land use planning* qualifications of municipal administrations have gradually improved. The municipal planners are important actors, and Schlaupitz thinks their arguments are generally well-founded.

**Environmental organizations**

Torheim, Schlaupitz, Brendemoen and Gabestad talk about environmental organizations as promoters of traits of development in accordance with sustainability principles. Torheim points at especially the Nature Conservation Association and its youth organization. Brendemoen's section in the Ministry of Transport (the Public Transport and Environmental Affairs Section) is regularly being contacted by green organizations, mainly the Nature Conservation Association and the Norwegian Association against Noise, who, according to Brendemoen, manage to some extent to exert influence, but rather on detail issues. She does not think the lobbying of the green organizations toward the Ministry of Transport has had any influence on the prioritization between road development and public transport improvements in the Oslo region.

Helle states that the environmental organizations are very anonymous. He calls them 'virtually absent' in issues of spatial development. Even the Oslo Package 3 (which includes substantial new motorway development) has been adopted without any noticeable activity by the environmental organizations. According to Helle, these organizations seem to prefer to direct their comments and inputs toward the national government, not toward the county. For example, the environmental organizations were all silent when the location of a large builder's retail store to a car-dependent site in Skedsmo was discussed, and they also did not react to the plans of transforming the old military camp at Lahaugmoen into a car-dependent office park. Similarly, Schlaupitz considers that there are very few lobbyists for walking and biking as modes of travel.

In Jensen's view the Nature Conservation Association and similar organizations are in lack of a policy for Oslo as a whole.

De Vibe talks about how environmental organizations sometimes fight against densification. Schlaupitz agrees to some extent. He talks a lot about the Nature Conservation Association, as this is where he works. They have struggled against development on several intra-urban green areas, Schlaupitz says, but he does not think that they have contributed to a more dispersed urban development. He mentions the claim of some debaters that a strong defense of the Marka border has pushed development to more peripheral locations in Akershus. Schlaupitz does not agree in this but he does agree that some of the resistance of local Nature Conservation groups against development on urban open space may be somewhat myopic. As an example, he mentions the resistance against development on an area at Alnabru that could be characterized as a mere fallowfield. In Schlaupitz' view, the Grorud valley bottom (in which Alnabru is situated) is a major industrial/commercial area and should be allowed to develop as such. In most cases, however, the local fights of the Nature Conservation Association have been in line with what is preferable from a more comprehensive sustainability view. As examples, Schlaupitz mentions the resistance against the location of the Postal Administration at Robsrud in Lørenskog, the Lahaugmoen commercial park in Skedsmo, and proposals for development at Svartskog south of Oslo.

**Other lobby organizations**

The lobby organizations mentioned by the interviewees apart from environmental NGOs are various trade and business organizations and neighborhood organizations. Perhaps a bit surprising, transport policy interest group organizations like the Norwegian Automobile Federation are not mentioned as influential by any of the interviewees.

Among *trade and business organizations*, the Chamber of Commerce and associations of inner-city land owners are mentioned by Gabestad as actors promoting growth and profit at the cost of the environment, in this case by lobbying for new parking facilities just beside the City hall. The Norwegian Association of Heavy Equipment Contractors has, according to Schlaupitz, propagated a new outer ring road (Ring 4) that would encroach on and facilitate development in considerable areas within the Marka border.

As to transport lobby organizations Horntvedt and Brendemoen think that there is lobbying going on for road development. They are, however, quite vague in their statements. Elvestuen does not think that car owners' organizations have exerted any influence worth mentioning. More generally, Helle thinks traditional non-governmental organizations exert much less influence on the spatial development in the region, compared to land owners, developers and municipal authorities. This also includes the major business and trade organizations. The third runway at Gardermoen airport is, according to Helle, the only exception. In this case, business organizations lobbied for the realization of this extension.

Madsen describes how there was a strong pressure from the Norwegian Confederation of Trade Unions (LO) to keep the Nydalen urban transformation area as a site for manufacturing industries, and this was probably an important reason why the original municipal plans presupposed Nydalen to be a monofunctional workplace area.

Jensen, de Vibe, Gabestad and Schlaupitz point at *neighborhood associations*, neighborhood action groups and/or single-family home owners in the western districts of Oslo as actors fighting against the densification. According to Jensen, the main purpose of neighborhood associations is to protect the privileges of their members. He thus clearly considers these organizations to be promoters of NIMBYism. They are especially against any type of densification in single-family home areas and are very aware to ensure that the plans include ample local green areas. De Vibe says that the neighborhood action groups are sometimes supported by groups of professionals who are proponents of 'harmonious densification', which in practice means a rejection of the construction of apartment buildings on vacant plots in districts dominated by villas. Schlaupitz describes the neighborhood organizations as often uncritically supporting road building that may detract traffic from their local area, regardless of the contribution of these roads to overall growth in traffic. They usually want roads to be built as tunnels rather than questioning whether the road should at all be built.

As the only interviewee Torheim mentions *researchers and communicators of research results* showing negative consequences of urban sprawl as promoters of a more concentrated and dense urban development. On the other hand, according to de Vibe, professionals, notably architects, have argued against what they consider to be too high planned densities in the inner-city harborfront development at Bjørvika.

**Political parties**

As to politicians and political parties, the interviewees express somewhat diverging opinions about their roles. There has been a high degree of consensus about the densification policy. In transport policy, there has usually been a clearer left-right divide, but the broad consensus about Oslo Package 3 seems to have silenced the criticism against road capacity increase traditionally leveled by the left-wing.

Jensen considers that there has been a broad political consensus around land use issues such as the development border against the Marka areas, the general densification policy and the transformation of old harbor areas. Torheim says that the politicians to the left have generally been more concerned about steering urban development toward the sustainability goals. Elvestuen states that there is a fierce struggle about the sustainability measures in the city council, such as the re-establishment of previously closed-down streetcar lines. He claims that his own Liberal Party (Venstre) is the only party that has voted for all the sustainability proposals. Sometimes, they have cooperated to the left, and sometimes to the right. According to de Vibe, The Liberal Party has exerted a much stronger influence than their share of votes might indicate. Their role has been to defend the urban green structure and heritage built environments. On the other hand, the right-wing liberalist Progress Party has been pushing for more road development.

Brendemoen and Torheim mention the partners of the Oslo Package 3 deal (the four most influential political parties in the Municipality of Oslo and the County of Akershus spanning from the Socialist Left Party to the liberalist-conservative Progress Party) as an important group of stakeholders that has contributed to a decision that will lead to much more road development than what Brendemoen thinks would be desirable. Brendemoen still thinks the package would have looked quite different (with less public transport) if the Socialist Left Party had not been part of the deal. Schlaupitz states that several of the political parties would like a higher pace of road construction. In Schlaupitz' view, the political parties push more

impatiently for more road construction than does the road administration. For the Nature Conservation Association, politicians therefore often make up a more difficult challenge than the staff of the Highway Administration.

**State-level policy instruments**

Four of the Oslo interviewees think that state-level policy instruments have contributed to a more sustainable development than would have been the case if the local authorities had been allowed to operate without such restrictions. In the context of urban planning and sustainable mobility, the National Policy Provisions on Coordinated Land Use and Transport Planning are in particular important.

According to Torheim, land use has been influenced by the National Policy Provisions on Coordinated Land Use and Transport Planning, but there are fewer traces of these provisions when it comes to transport investments. He thinks it is difficult to sort out how much the policy provisions have influenced land use, compared to changed opinions among planners. He thinks that the changed opinions among planners may partly be a result of the National Policy Provisions. The Ministry of the Environment has sometimes, based on the National Policy Provisions, stopped car-based locations. One example is the Norwegian Postal Agency's location at Robsrud in Lørenskog, where a requirement of 50 % public transport share was not met. The Postal Agency has now been instructed to prepare a transport plan and elucidate alternative transport solutions for its employees (mobility management).

As mentioned above, the Highway Administration at regional level has quite often submitted formal objections against car-based municipal land use proposals. According to Torheim, this agency dares submit such objections to a higher extent than do the county-level state environmental authorities (and the politically elected county council dares not at all).

De Vibe thinks national policy provisions are somewhat important and that they have influenced the content of planning debates. In particular, de Vibe points at the National Policy Provisions on Coordinated Land Use and Transport Planning which were the first national policy instruments ever introduced in order to limit the growth in car traffic. She also thinks the corresponding policy provisions aiming to safeguard the interests of children and young people in planning have been important in order to avoid a too hard-handed densification – as does Horntvedt.

Some other interviewees do not think that the National Policy Provisions on Coordinated Land Use and Transport Planning have made much difference. Elvestuen considers that the spatial and transport infrastructure development in the municipality is the result of Oslo's own plans and prioritizations, and not something that has been imposed through state-level policy instruments. Similarly, Gabestad does not think that the Land Use and Transport Planning provisions have contributed to any extent worth mentioning to changing the policies of the agency of which he is the head (the Agency for Road and Transport in the municipality of Oslo). The professional and scientific principles on which these policy provisions are based were already understood and adopted by those working with these topics in the municipal administration, Gabestad says.

Jensen states that the Marka border has been important to stimulate densification. The Ministry of the Environment required this border to be incorporated in the municipal land use plans of the municipalities in question, but there are no

indications that Oslo would have proposed urban development in the Marka areas in the absence of these national-government requirements. In fact, Oslo had already its own Marka border and was the most positive among the affected municipalities when the Ministry of the Environment presented its initiative concerning the Marka areas in the mid 1980s.

As the only interviewee Helle mentions national-government policies for the protection of farmland as an obstacle against many desirable urban densification projects in the county of Akershus. He says, however, that these policies (and the way they have been pursued by state agencies at the county level) have become less rigid in the recent years, possibly because of the National Policy Provisions on Coordinated Land Use and Transport Planning.

According to Gabestad, the Oslo Package 2 has had a considerable influence on the increased investments in public transport experienced in Oslo during recent years. Elvestuen disputes, however, that the Oslo Packages should be considered as state-level policy instruments. Instead, he mentions the Oslo Package 3 as an example of a local [i.e. Oslo and Akershus] initiative.

Jensen criticizes the national policy signals regarding the previous airport areas at Fornebu (which were a part of the National Policy Provisions for the new airport at Gardermoen) as being too vague. The government wanted the development of Fornebu to be based on principles for "good land use", but refused to concretize what this meant. It was therefore possible for the municipalitiy of Bærum (where the airport is located), Statsbygg (the National Agency for Public Construction and Property Management) and the municipality of Oslo (who is, together with Statsbygg, the land owner in spite of the fact that the area is located in a different municipality) to interpret the policy provisions in very different and incompatible ways. The reason why the Ministry of the Environment refused to specify the national priorities was, according to Jensen, that they might later become the authority dealing with a complaint on the land use in the area.

## 5.8 Barriers to sustainable urban development

The interviewees point at several barriers against what they consider to be a more sustainable urban development. Below, we shall in particular focus on barriers resulting from lack of coordination between different authorities, lack of political willingness, and contestation about knowledge claims.

**Lack of coordination**

The interviewees mention many different forms of lack of coordination as barriers to desirable, more sustainable solutions: Lack of horizontal coordination at different levels and in different contexts of public administration (e.g. between different ministries, between different departments within the same ministry, between different state agencies, between different municipalities, between different agencies within a municipality); lack of vertical coordination (between national-state level, county level, municipal level and possibly also sub-municipal levels of public administration).

Brendemoen and Torheim talk about the relations of cooperation between the *Ministry of Transport and the Ministry of the Environment* which are nowadays good but used to be less favorable. It all depends on the political leadership, Brendemoen

says. Torheim also mentions the *Ministry of Finance* as an obstacle against efforts by the Ministry of the Environment to change the subsidizing of car travel in business life, where employees may often drive company-owned cars for private purposes but cannot get public transport fares paid by the employer.

Brendemoen mentions the fact that the *Ministry of Transport* has to rely on other parts of public administration in order to promote sustainability policies. The respomsibility for transport policy is distributed between several administrative tiers and between different actors within the same tier. Policies on taxes and fees are in the hands of the Ministry of Finance and land use, parking policy and public transport (except the national railways) are local responsibilities. Although the Ministry may promote certain policies, much of the implementation lies with other agents. This also applies to road pricing. Even though the Minister of Transport is positive to this measure, it will not be implemented unless local authorities go for it. The Minister is very much in favor of the allocation of this responsibility to the local level. Brendemoen thinks the reason why the local authorities do not take such an initiative is because they know their voters do not want road pricing. 'So if they propose this, they will lose their seats – no later than at the next election, possibly earlier.'

Brendemoen says that *within* the Ministry of Transport, the Public Roads section has the main responsibility of the Oslo Packages. Her own section has been less involved.

Several interviewees (de Vibe, Schlaupitz, Helle, Torheim and Horntvedt) see a need for better *regional coordination of land use*. Schlaupitz says that regional plans exist, but they have no legal status, and the possibilities for objections against violations are not utilized. What is needed, according to Schlaupitz, is a legally binding land use plan for the entire region. He thinks the need for more top-down regulation should not be concealed. Such regulations should also include parking availability, in order to avoid a restrictive parking policy in Oslo from inducing more Oslo inhabitants to driving to out-of-city shopping centers in Akershus. De Vibe does not think the regional coordination should take the form of legally binding county plans. Instead she recommends making it mandatory for the municipalities to coordinate their land use mutually. De Vibe also thinks it is a challenge to balance the higher-level land use strategies against the pragmatics of the daily decisions on building permits. She does not, however, suggest any solution or decision-rule to cope with this.

According to Torheim, municipal political decisions too often are based solely on considerations of impacts occurring within the municipality's own borders. Helle points at the rules for company taxation as something that creates a strong incentive for municipalities to compete for companies to locate within their territories. According to Helle, such competition for inward investment is especially fierce between the municipalities to the northeast of Oslo (Romerike). In this context, maintaining environmental standards and principles (e.g. limiting the number of parking places) is a competitive drawback. Asked about whether a different territorial organization could result in a better location of new residences through enabling the establishment of a common housing development program for the entire Oslo-Akershus region (e.g. Oslo being a part of Akershus, or a merging of municipalities), Helle agrees in this. He thinks that there is a need for a regional-level body that can control (by means of some quite strict implementation measures) the

spatial distribution of new development. At least, there should be a common and coordinated municipal planning for the municipality of Oslo and the four neighbor municipalities Bærum, Lørenskog, Nittedal and Oppegård. Such coordination is currently not in place, and Helle thinks the prospects are presently quite remote for establishing such a coordinating body. In a recent governmental white paper on 'governance challenges in the Capital region' this is pointed at as a challenge, but no concrete reforms seem to be in the coming.

Horntvedt also thinks competition between Oslo and neighbor municipalities causes less-than-optimal land use results by several occasions, and mentions the development of the previous airport areas at Fornebu as an example. She thinks Oslo ought to be one large municipality, but finds it difficult to demarcate the city in such a way that only the continuous urban area would be included – for what would then be left of a municipality like, e.g., Bærum? Alternatively she mentions mergers between some of the surrounding municipalities as a possible strategy, e.g. merging Asker and Bærum in order to get rid of some of the competition now leading to duplication of facilities like cultural centers. In the southeast, the so-called Follo Council has facilitated better inter-municipal cooperation, Horntvedt says.

Elvestuen, on the other hand, does not think competition between municipalities for inward investment represents any barrier worth mentioning against a sustainable urban development. As he sees it, the municipality of Oslo has anyway such a strong position, which can be witnessed by the amount of traffic toward Oslo in the morning peak period.

Given the national sustainability goals, Jensen thinks the national government has taken far too little responsibility for *public transport improvement.* According to Schlaupitz, public transport receives less funding than the road sector. Whereas money for roads is earmarked from the state, public transport has to compete with other sectors and often loses in the struggle for resources. Helle wonders why there is such a low degree of coordination between the land use policies and the investments in transport infrastructure. According to Helle, the slow pace of railroad improvements in Akershus (except the Gardermoen airport line) is purely a result of lack of funding from the national government. If funding were available, Helle says, the planned new tracks and other improvements could be realized in the course of a few years, as all the necessary plans have already been made. Helle and Jensen also point to a very complicated pattern of agencies and decision-making bodies (including the National Railways, the Ministry of Transport, the Highway Directorate and its regional offices, the Municipality of Oslo (with two different agencies responsible for each their part), the Oslo Package II secretariat, the county of Akershus) regulating the flow of funding for public transport investments and operation. According to Helle, this complex and fragmented funding structure is clearly dysfunctional, seen from the perspective of public transport improvement.

Asked about the reason for the lack of state funding for public transport improvement, Helle says that the Ministry of Finance (even when ruled by his party colleague Kristin Halvorsen) is not willing to allocate more money to the construction sector than the already high amount this sector receives. More money for railroad improvement in the Oslo region must therefore be taken at the cost of other transport projects. And since a high proportion of road construction is nowadays financed through road tolls, public transport improvement in the Oslo region is in practice competing for funding with a number of small, highly cost-

effective railroad improvements in other parts of the country, and with smaller road projects in rural and remote parts of Norway.

Brendemoen has not been working with the Oslo Package 3 and does not know the extent to which the Ministry of Transport has established requirements on the outcome of the Oslo Package 3 process. National goals of increasing the share of public transport exist, and Brendemoen thinks the package includes after all a lot of public transport. Brendemoen does not know if the Ministry would have intervened if the public transport content of the Oslo Package 3 had been substantially lower than what was actually agreed on. Brendemoen also mentions that it would be very difficult for the Ministry of Transport to try to change the deal made by county and municipal politicians about the content of the Oslo Package 3. Especially so because the parties involved state very clearly that nothing in the agreed package can be changed. The package includes toll road funding of some 50 or 70 billions, which come in addition to the money available for the sector through the ordinary budgets. The package gives 50 billions to the state. So the ministry would have to be extremely tough to say no to such an offer.

Torheim considers the administrative division of responsibilities to be far from optimal. In his view, there is a lack of coordination across modes of transport and across municipal borders. There are different regimes navigating according to different compasses. Examples of this are the delayed construction of a railroad to the previous airport area at Fornebu, and the closing down of the urban rail line to Kolsås in Oslo's western neighbor municipality. Torheim hopes that the merger of the Oslo Municipal Transit company (Oslo Sporveier) and the Greater Oslo Local Traffic company will improve the situation somewhat. The County Hospital of Akershus is another example, with poor public transport accessibility despite the large number of employees and visitors. While the Highway Administration at county level often submits objections against car-based land use proposals, the politically elected county council doesn't dare to do so, and the county governor's environmental department (a county-level national-state administration) only now and then dares.

At an *intra-municipal scale*, Dahl says that within the municipality of Oslo, several agencies work with transport issues. Notably, the Transport section of the City Government's Department of environment and transport is in a position where they have better possibilities to give direct advice to the politicians in charge, for example on the issue of road pricing. Gabestad, on the other hand, does not depict lack of horizontal or vertical coordination as an important barrier against implementing a desired (sustainable) policy. Jensen criticizes the allocation of administrative responsibility for location of primary schools and kindergartens in Oslo, where these decisions are made without the planning agency being able to exert much influence. According to Jensen, the lack of adequate provision of primary schools and kindergartens in local neighborhoods is due to the fact that the responsibility for this planning has been given to "economists and political scientist in the town hall", in stead of the city planning office where it belongs.

Jensen and Schlaupitz are unsatisfied with the poor implementation of plans for *bike path construction*. Facilitation for cycling is in lack of an institutional base – in other words the responsibility for this is fragmented. Within the planning agency, bike path construction has been left to the district offices. The road office was supposed to cater for the bike facilities but did not follow up this responsibility. Aims for such

facilitation have been written in some policy documents, but there is no responsible agency. Schlaupitz thinks a directorate should be responsible for this task. Today, there is a contestation between the state and the municipalities about funding responsibility for bike facilitation. There is also a need for coordinated planning across sectors in order to improve the conditions for bike travel.

Elvestuen thinks the fact that the *intra-metropolitan train services* are run by the National State Railways prevents an optimal coordination with the remaining public transport within Greater Oslo. He therefore thinks the local train traffic should be run by the local public transport authorities. Elvestuen thinks local train transport in Greater Oslo will not get sufficient priority by the national government, and that the state funding of this train transport will therefore always be too small. Instead, he proposes that local funding (based on toll revenues) should finance local train transport, with state guarantees as a security.

De Vibe thinks the emergence of *semi-public state-owned companies* represents a particular coordination problem, since these companies have an unclear authority making it difficult to resist their development proposals.

**Lack of political willingness**

Political lack of willingness to adopt the solutions that from a professional or scientific point of view are believed to be the most sustainable may be a barrier to sustainable urban development. The interviewees give a few examples of this. Such rejection of the presumptively most sustainable solutions by the political leadership has first and foremost occurred on issues of transport policy and transport infrastructure investments. As regards the compact city strategy, the political overruling of planners' recommendations that has occurred has not necessarily contributed to less dense development. At least within the municipality of Oslo, the willingness to implement high-density development (and hence reduce car travel) has sometimes been higher among politicians than among planners, who have argued for putting limits to density in order to protect local environmental qualities. In the municipality of Akershus, politicians have been keener on allowing car-dependent developmental projects (cf. section 5.7), but the interviews give no indications that this has happened against opposition from the planners.

According to Schlaupitz, politicians are often more keen on *road building* than the Highway Administration itself, and they are also apt to accept certain knowledge claims (e.g. that road building does not lead to more traffic) which have quite low scientific and professional credibility (cf. below). De Vibe thinks Oslo's politicians most often follow the planners' advice, except as regards road development. For example, due to disagreement between politicians and planners, Oslo's work on giving input to the National Transport Plan was moved away from the planning agency to the political committees. Brendemoen says that she personally finds it hard to characterize Oslopackage 3 as an environmental package. The official, politically stated opinion of the ministry is that the Oslo Package is a positive outcome of difficult negotiations and a very desirable agreement between different actors at the county and municipal levels.

As regards the issue of *road pricing*, Brendemoen thinks they have now got a minister who is responsive to the professional arguments of the ministry employees. It has no always been this way; in a previous government the minister of finance would probably not have accepted such an instrument.

According to Gabestad *parking policy* may be another example of a topic where the political preferences deviate from the professional advice given by the Agency for Road and Transport. For example, the city government wanted to construct a garage under the city hall square, against the advice of Gabestad and his colleagues (and also against the majority of the City Council, as it turned out).

De Vibe says that in *land use matters*, disagreement between planners and politicians is less fundamental, although details in the plans are often changed due to political intervention. For example, there is a recurring struggle over building heights in urban transformation projects, where the political decision-making has often resulted in taller buildings than recommended by the planners (e.g. at the harborfront area of Tjuvholmen). Another example of political overruling of the planners' advice is the location of the US embassy at Huseby.

Horntvedt also comments on the controversies that have arisen about high-rise development in the inner parts of Oslo. She thinks such development would be favorable seen solely from a transport-minimizing interpretation of sustainability. But as a politician she did not recommend as high densities as proposed by the Planning and Building agency. Similarly, she mentions the first plan launched by the Planning and Building agency (in the early 1990s) for the future of Oslo's low-density housing areas. This plan envisaged a much more intensive densification than Horntvedt and her fellow conservative politicians could accept. The plan was later revised in a way more compatible with Horntvedt's view.

Apparently, de Vibe and Horntvedt tell somewhat different stories about who are most keen on high-rise development – the planners or the politicians. Possibly, there has been a shift in opinions from the time when Horntvedt was the leader of the Standing Committee on Urban Development until the recent debates about building heights at the harborfront. On the other hand, as we shall see below, politicians pushed for high inner-city densities also in the late 1980s.

Jensen thinks there has been a considerable tension between Oslo's political authorities and the municipal planning professionals, and partly the relationship could be characterized as one of opposing views. In the 1980's the politicians were very much in favor of growth and high-rise development. This was considered a means to brand Oslo as a big city. The municipal planners had to renounce on some of their professional ideals as the Municipality of Oslo had got a new urban government that was strongly inspired by the liberalist policies of Ronald Reagan and Margaret Thatcher - a quite dramatic departure from previous practice. The leader of the city government, Hans Svelland, said that he did not want a land use map stating that in these areas there should be dwellings, in these areas commercial development, and so on. Instead, he wanted a land use map showing where there was dominance of different types of land use. Then the market could itself find out where it would be favorable to locate (i.e. a sort of indicative planning). The land use plan within the 'building zone' (i.e. the areas on the urban side of the Marka border) looked almost like a child's drawing, with dominant land uses shown crudely by crayon markings on the city map. (Yet some areas within the 'building zone' were designated in local plans as parks and other green areas and thus had fairly strong protection against development.) The planning practice of Oslo in the following years was much inspired by the policies of the US city of Fort Collins in the state of Colorado, where applications for building permits were evaluated according to their score according to a number of different criteria, where what mattered was the total

score and not the conformance with any pre-specified land use. This policy was largely followed in Oslo in the following decade. The border against the surrounding forests (Marka) was, however, drawn exactly, and these areas were subject to strong protection against technical encroachments.

According to Jensen, the planners by and large adapted to this mode of planning, which – given the overall containment strategy ensured by the Marka border – has been quite successful in encouraging developers to implement densification projects, especially at the designated public transport nodes.

**Contestation about knowledge claims**

Contestation about whether or not a proposed policy measure is likely to bring about the assumed effect may be a barrier against implementing this measure. If the politicians believe that a land use or transport infrastructure strategy proposed by the planners will have no effect at all or the opposite effect of what is claimed, their willingness to support this strategy may be low, especially if the strategy is for other reasons controversial. If the knowledge on which the proposal is based can be characterized as uncertain or contested, the mere existence of such counter-claims creates a sort of cognitive incongruity that may favor inaction.

In general, Elvestuen thinks that some types of knowledge are used *strategically and selectively*, disregarding other types of knowledge that might lead to more nuanced or different conclusions. For instance, with the current increasing emphasis on climate change, the fact that urban densification is more favorable than urban expansion in terms of reducing greenhouse gas emissions from transport is used by developers as an argument for building on any inner-city site with as high a density as possible. In the political debate on urban development, the standpoints of different parties on specific topics are almost much the same as earlier, the difference is that the arguments are now based on a rhetoric of sustainability and greenhouse gas reduction.

As to the influence of urban land use on travel, Schlaupitz states that the Nature Conservation Association encounters few expressions of doubt. Among our interviews, Helle's arguments about the alleged transport-reducing effect of relocating e.g. office workplaces from Oslo to Akershus may still be seen as an illustration of how politicians sometimes reject research-based knowledge about relationships between land use and transport. Investigations in the Oslo region have shown that average commuting distances tend to increase rather than decrease in the years after such relocation.

Knowledge about the *influence of road capacity increase on traffic growth* is to a higher extent being contested. Brendemoen, for instance, thinks that the position one takes on this issue is largely based on what one chooses to believe and that the state of knowledge is simply insufficient on this topic. Torheim has another perspective on this. He thinks that some politicians do not want to see the relationships and to look holistically on the traffic problems. Gabestad, on his side, gives some statements where the implications seem to be that in an urban context, politicians may not be interested in articulating very loudly the fact (which they recognize cognitively) that increased road capacity leads to traffic growth. Schlaupitz says that most of the serious research into these issues show that increased road capacity lead to increased traffic growth. However, there is clearly a struggle between different actors concerning which knowledge claims should be accepted as true about the impacts of

road constructed in congested areas and sometimes alternative conclusions are convenient for many politicians. Within this field, Schlaupitz repeatedly finds it necessary to fight against what he considers as scientific disinformation. As for traffic safety, the Nature Conservation Association also fights against the view that four-lane roads contribute to increase traffic safety, compared to smaller roads.

Brendemoen also thinks there is considerable professional disagreement on the effect of taxes and fees, e.g. the NOx fee. She thinks it is possible, based on fairly good knowledge base, to mean different things about this issue.

Torheim mentions that attempts to stop the establishment of new out-of-town shopping centers are often countered by the argument that such restrictions imply a distortion of the conditions for competition.

## 5.9 Plan, market and economic driving forces

The land use development that has taken place in Oslo Metropolitan Area is to a high extent in accordance with municipal land use plans as well as national policy documents. The extent to which adopted land use plans actually shape the spatial development or are mere formalizations of a development that would anyway have produced by market forces is of course a matter that can be disputed. We therefore asked the interviewees about their opinions as to the importance of public planning and the influences on the spatial development exerted by market forces.

**Public land use planning and market forces have both worked for densification**

Several interviewees hold that the urban densification prescribed in the land use plans has to a high extent been supported by market forces. Horntvedt mentions demographic changes (more single-person households and more upper-middle aged and elderly couples whose children have moved out of their parents' household) as contributing causes of an increased demand for inner-city living. According to de Vibe, the planning priorities during recent decades have been very much in line with the Zeitgeist. An increasing part of the population want to live centrally, and this translates into market demand for inner-city development. Actually, the developers push for even higher densities than recommended by the city planners, a fact also mentioned by Horntvedt. On the other hand, the current municipal plan for Oslo is the third or fourth generation of municipal plans promoting the same overall land use policy. De Vibe also emphasizes that she knows no other city that has had such a relatively constant border against surrounding natural areas as Oslo. She thinks this has something to do with the outdoor recreation culture, which provides popular support of firm planning protection of the Marka areas.

Helle and Torheim both think that market mechanisms have helped to realize the intentions of the National Policy Provisions on Coordinated Land Use and Transport Planning, which were for a long time quite strongly opposed by politicians from the municipalities to the northeast of Oslo (Romerike). As an example, Helle mentions the municipality of Nes, where large areas were set aside for residential development at locations far away from any center or railroad station (e.g. Neskollen and Låvegsåsen). In recent years, it has proved almost impossible to sell plots in these areas, as people would much rather like to settle in the municipal center. Similarly, in Bærum, a remote residential area planned to be developed at Avtjerna has not attracted any investors and remains undeveloped a decade or more after it was

established in the municipal plan. Helle does not believe that the market trend will change in a way making such remote areas attractive again.

Elvestuen is a bit more unclear about the roles of planning and market mechanisms in producing the concentrated and dense urban development experienced in Oslo during the recent decades. On the one hand he says that reurbanization and inner-city revitalization is an international trend. On the other hand he emphasizes the importance of political initiatives and a political culture geared at innovation. Without political willingness and power, the Municipal plan would hardly have had much influence.

Elvestuen thinks that the market forces do not only contribute to urban densification in Oslo. They can also contribute to some extent to 'edge city' development, in particular in corridors between cities and airports. Currently, such development can be seen in the corridor between Oslo and Gardermoen, says Elvestuen. Before the Gardermoen airport was opened, similar location of companies occurred along the highway leading to Fornebu airport, but this development (at least the part of it occurring between Oslo and the airport) took place within already urbanized areas.

Gabestad thinks that the turn toward a higher share of inner-city housing development would have occurred also in the absence of planning initiatives to promote densification. He thinks there has been a shift in residential preferences leading to a higher demand for inner-city living, possibly as part of a cultural trend. Such a trend shift also seems to have occurred as regards commercial development. According to Madsen, the current market demand for spacious, low-density commercial development areas is quite low, as shown by the modest development that has taken place in the planned commercial areas near Gardermoen airport. The market now demands good public transport access, Madsen says. For many of the public-sector agencies that have moved into the Nydalen commercial buildings, the new urban rail stations has been a crucial condition without which they would hardly have chosen Nydalen. The urban rail line has become an increasingly important location factor for private firms too (it was, for example essential for the Norwegian School of Management). This also applies to the housing market. The residences at Nydalen (the Solsiden project) have been economically very successful for the developers, although the prices have been quite affordable.

**Densification, planning and growth**

According to Torheim, several market agents think the National Policy Provisions on Coordinated Land Use and Transport Planning are reasonable because they will contribute to develop attractive cities and hence boost economic growth. The director of the developing company Avantor, Christian Joys, is, according to Torheim, one of the key proponents of this view. He is in favor of a broad environmental effort, and this is reflected in the development of the Nydalen district. He considers that public regulations and the exercise of public policy can create win-win situations. Many developers are in favor of stable and unambiguous conditions. Public-sector influence kept stable over time can play an important role, according to Torheim, because it can influence the preferences among market agents. He refers to the urban rail line in Bergen, which was originally opposed by business life, but now influences the location preferences of the market agents.

On the other hand, Torheim considers the economic bonanza (which was still high at the time of the interview) as an important driving force of a development in a

direction away from the sustainability goals. Torheim thinks it is naïve to think that people will by themselves move in the direction of sustainability under such conditions. If Torheim is right in his assumption that an environmentally sustainable urban development boosts economic growth, this raises a paradox: The very same urban policies that aim to enhance sustainability may contribute to a bonanza making people behave in a less sustainable way.

**Political interventions have influenced traffic development in central Oslo**

Brendemoen thinks that land use and transport policy has generally to a high extent been controlled by politics rather than the market and that the overall good public transport in Oslo and the limited accessibility by car in the city center (scarce parking capacity, many one-way streets etc) are results of political interventions and strategies. She does not think the situation would have been like this if the development had merely followed market demand. 'Here, the market has very much – indeed to an extreme degree – been bridled, you could almost say.' Consistent with Brendemoen's view, Gabestad says that his agency has to take the role of a counterweight against the market mechanisms and pressure from commercial agents lobbying for maximum accessibility by car, e.g. in terms of the level of parking supply.

On the other hand, Torheim thinks that it is easier to get funding for road development than public transport through public-private partnerships and toll revenues.

**Planning has set some key conditions under which market forces operate**

In Jensen's view, the adopted urban demarcation against the surrounding forest areas (the Marka border) has been an important condition in order to create interest among developers for densification and transformation of brownfield areas at public transport nodes. Similarly, Gabestad says that in a situation with a high building activity in Oslo, the development border against Marka has led to a situation where building sites are scarce, and the construction has therefore taken place as densification. Horntvedt too thinks that the development border against the Marka areas is an important cause of the high market demand for high-density development in Oslo. She thinks that there is a latent, now suppressed demand for new single-family houses in Oslo ('there are not enough villa sites'), and that this demand is now – in the absence of a supply of building sites for single-family house construction – transformed into a demand for more concentrated housing.

According to Schlaupitz, there would be a considerable market demand for urban development in certain areas beyond the Marka border in the absence of the planning regulations protecting these areas. In particular, he thinks there would be considerable development in the valleys of Sørkedalen and Maridalen, where the costs of infrastructure development would not be very high. Schlaupitz also thinks several areas in the border zone between Marka and the city would be exposed to a considerable market pressure for development.

Similar to the way that market agents have adapted to the overall land use conditions set by the Marka border, the market seems to increasingly accept that the supply of parking will be limited in high-density urban transformation areas with good public transport accessibility. Madsen considers that the limited supply of parking places in Nydalen is increasingly considered by the market agents as acceptable. The market has for a long time accepted that downtown office building have very limited parking

provision, if any at all. Until some five years ago (i.e. 2002), the market still expected more parking availability at locations like Nydalen, Bryn, Lysaker and Skøyen. This is not the case anymore. The market has also responded positively to the carpooling scheme.

**Market-oriented governance**

Jensen mentions the turn toward market-oriented planning imposed by the conservative-liberalist municipal government in the 1980s. The less strict regulations with more emphasis on negotiations on separate projects rather than comprehensive planning have, according to Jensen, not been detrimental, although there was a skepticism and negative attitude among the planning staff toward this change when it was introduced. Jensen considers the urban development in this period, largely driven by private developers, as favorable from a sustainability point of view because the developers embarked on the transformation of centrally located areas and also promoted higher densities.

Jensen considers the responsible professional private developers to be generally in favor of public planning and regulation ("they are not sharks"), because they are in need of predictability and stable conditions.

According to Jensen, the public authorities have to a high extent accepted market driven urban development as a condition. Some of the influential market agents are in fact public (or semi-public) authorities like the State Railways' property department. The politicians have defined the purposes and tasks of this and similar agencies in such a way that they are supposed to earn money. The municipality of Oslo also has to pay some of the costs of the new road tunnel relieving Bjørvika from through traffic. Therefore, the municipality considers it necessary to regain this money from the developers of Bjørvika. This increases the plot costs, which in its turn creates a pressure for higher densities and reduces the possibility of including public functions like an aquarium in the area. This is an example of how municipal economic considerations increasingly affect the spatial development.

Gabestad thinks Oslo's increased pace of housing development may partly be tax-motivated: the municipality of Oslo provides a large supply of facilities used by the entire urban region, and increasing the number of inhabitants within municipal borders implies that the costs of running these facilities may be distributed on more people.

Horntvedt mentions that some semi-privatized public agencies (notably the Harbor Agency) have now adopted a profit-seeking behavior similar to private companies, pushing for the highest possible densities if their areas are to be transformed into urban developmental areas. Horntvedt criticizes this, and implicitly then also criticizes some of the results of New Public Management transitions of the public sector.

**Densification, housing and affordability**

De Vibe does not think that it is relevant to blame the Marka border for the high and (by then) rising housing prices in Oslo. Steeply increasing housing prices in the central parts of national capital cities was at the time of the interview a phenomenon occurring in several cities over the world, regardless of any greenbelt policy.

Although the new dwellings at Nydalen were sold at relatively affordable prices, some of these dwelling were, according to Madsen, purchased by investors who then

sold them at much higher prices later, harvesting profits from general price increases in the housing market. This represents a challenge to the aims of Avantor of providing housing for a socially and demographically diverse population. He also admits that it has been difficult to attract families with children to Nydalen. He thinks this is not due to lack of green space, but mainly due to the generally high housing prices in the inner parts of Oslo. You may buy a row house at the outskirts of Greater Oslo, with more private outdoor area, for the same price as a 3-room apartment at Nydalen, and for most families with children the former alternative will be more attractive. Madsen thinks the high construction costs are the main reason for the high housing prices in Oslo, and cannot imagine any way of curbing price increases by means of political interventions.

According to Madsen, good public transport accessibility is important to attract population groups other than the 'car segment'. Conversely, building affordable housing may be a presupposition for provision of high-standard public transport services. If the previous airport areas at Fornebu, for example, are developed at too low density ('if you build only for the rich..'), the population base for the planned urban rail line to this area will be too meager, and then the rail line will not be built, according to Madsen.

**Pressure toward a monofunctional Central Business District**

Madsen thinks Oslo has managed to implement mixed-use development to a higher extent than in many larger European cities such as London. Oslo has not a sufficiently high attractiveness as an international headquarter city for multinational companies to push downtown land values up to a level comparable to, e.g., London or Stockholm. In Oslo, inner-city land values have therefore been at a level making it possible to incorporate dwellings as well as small shops and service firms interspersed with office development. In cities like London, firms that cannot afford to pay top-market prices are squeezed out of the inner city, which then becomes increasingly a monofunctional area inhabited by international companies that are accustomed to paying a much higher rent. In Oslo, only a few companies are able to pay top-level rents (NOK 4500 per square meter in Oslo's downtown area), this applies to some financing and broker firms, but this price level is way above what the average Norwegian company can afford. However, Madsen thinks there is a trend in Oslo, too, toward higher downtown land values, which may in the future make it difficult to maintain the present diversity. Such a price increase will also push developers like Avantor to somewhat more peripheral locations, although still within the built-up zone of the municipality of Oslo.

# 6 Sustainable mobility – an important concern in urban planning and development in Oslo Metropolitan Area

## 6.1 Introduction

Urban development in Oslo Metropolitan Area since the 1990s can been characterized as concentrated and compact. Within the continuous urban area of Greater Oslo, the population density increased from 28.7 to 30.7 persons per hectare between 2000 and 2009. Within the municipality of Oslo, the density increase was substantial. Here, the urban population density increased from 37.9 persons per hectare in 2000 to 42.3 persons per hectare in 2009, i.e. by more than 11 %. The increase in population density has been going on since the late 1980s. Before the mid 1980s, spatial urban expansion in Oslo Metropolitan Area was higher than the population growth, especially in the 1960s and 1970s.

The concentrated urban development has contributed to reduce growth in car traffic and must be characterized as favorable from the perspective of sustainable mobility. Considerable investments have also been made in public transport, notably the metro ring supplementing the existing radial urban rail lines, separate lanes for buses along main roads, and new and improved streetcar lines with a higher frequency of departures.

Compared to Oslo's development in the postwar period until the early 1990s, and also compared to current urban development in most European cities, Oslo has during recent years managed to combine high growth in population and the building stock with low encroachments on natural and cultivated areas and a moderate traffic growth. In spite of the strong population growth, especially within the municipality of Oslo, car traffic in Oslo increased by only 25 % during the period 1992 - 2005, compared to 34 % for the country as a whole (where the population growth rate was much lower). Judged against European ideals for sustainable urban development, Oslo can thus be considered as a case of 'best practice'. In 2003, Oslo received the European Sustainable City Award in competition with 60 other cities, yet another indication of a city showing a high environmental awareness in its planning and development (Municipality of Oslo, 2007).

But the picture is obviously more nuanced. Although high-density urban development reduces the conversion of natural areas into building sites, especially when channeling a high share of the construction to 'brownfield' sites, urban densification is unlikely to take place without any negative effects at all on within-city vegetation and ecosystems. During the period 1990 – 2002, the green areas within the urban area of the municipality of Oslo were reduced by seven per cent, e.g. in order to make space for new kindergartens or schools in districts where

densification has resulted in population increases exceeding the capacity of existing social infrastructure.

Moreover, there has been considerable urban highway development which has facilitated traffic growth and offset some of the effects of densification and public transport improvement. Surely, some of these roads (often in tunnels) have led traffic outside residential or central city areas and thus relieved these areas from noise and local air pollution. But there has been an increase in the overall road and parking capacity. The purpose of road capacity increases has been to combat congestion. This 'predict and provide' policy will hardly contribute to achieve transport and environmental policy goals of reducing greenhouse gas emissions and other negative impacts of urban motoring (Strand et al., 2009).

It should also be noticed that densities were at the outset not very high in the Oslo region, and the potential for densification has therefore been considerable, since the reserves of plots where urban densification can easily take place have been relatively large. Due to globalization, manufacturing industries have moved abroad and left large areas vacant for urban transformation. In addition, a long period of outward urban expansion in the 3 - 4 first decades after World War 2 had in itself left considerable space for densification. Oslo's stage of urban development at the beginning of the investigated period (see, e.g., Cadwallader, 1995; Kaplan et al., 2003) may thus help to understand the trajectory followed since the 1990s.

It seems safe to conclude that the change in trajectories of land use and transport development observed in Oslo Metropolitan Area since the 1990s (and within the continuous urbanized area of Oslo as long as since the early 1980s), compared to previous periods, are the results of the combined effects of a multitude of different causal mechanisms. Obviously, the standard and density of the already existing building stock has played a role. The combination of a relatively low density at the outset, strong economic growth during the period, high in-migration to the city and strong protection of surrounding areas against urban expansion has facilitated a high pace of development within existing urban area demarcations and hence a rapid increase in urban population density.

Once commenced, Oslo's densification policy has required renewed investments in technical and social infrastructure in the inner city. This has again made inner-city living and inner-city job locations more attractive, leading to a higher population base facilitating further infrastructure improvements. The densification strategy has thus to some extent been self-amplifying, leading to positive feedback circles and to some extent *path dependency* (Barter, 2004; Imran & Low, 2005). This importance of previous strategic decisions on urban spatial and infrastructure development to current planning and decision-making should still not be exaggerated: when Oslo's spatial development changed from outward expansion to predominantly densification in the 1980s, this represented a breakage from the path followed thus far. This breakage was probably caused by a multitude of cultural, demographic, economic and political driving forces.

This change was also encouraged by the fact that outward urban expansion in Oslo usually requires quite substantial infrastructure costs. In this part of southeastern Norway, rocky terrain often makes greenfield development on areas other than farmland expensive. This is especially the case in the municipality of Oslo with its situation in a 'bowl' surrounded by hills. Combined with quite strict national policies introduced in the mid 1970s against conversion of farmland into building sites, this

has made densification an economically more favorable option for municipalities in the Oslo region than in cities surrounded by flat terrain. The strict policies against farmland conversion were, in their turn, introduced for national preparedness reasons because farmland is a scarce resource in Norway, covering only 3 % of the national territory. The state policies for farmland protection in Norway were especially strict in the period 1975-1993 but have also exerted considerable influence on urban development later.

The extent to which adopted land use plans actually shape the spatial development or are mere formalizations of a development that would anyway have been produced by market forces is of course a matter that can be disputed. The land use development that has taken place in Oslo Metropolitan Area is, however, to a high extent in accordance with municipal land use plans as well as national policy documents. The content of these plans, and the prevailing opinions among the planning profession and other actors in planning and decision-making may therefore throw light on possible causes of Oslo's compact city development as well as its somewhat ambiguous efforts to improve public transport simultaneously with undermining the competitive power of this mode through urban road capacity increases.

Table 6.1 shows how our different sources of evidence provide answers to research questions concerning the opinions and understandings of different actors on urban sustainability issues, their views regarding actors and driving forces of urban development, barriers to sustainable solutions, as well as their assessment of the institutional and structural conditions under which urban planning in Oslo Metropolitan Area operates.

*Table 6.1: Overview of the answers provided by different sources of evidence to research questions about interpretations of sustainable development, land use and transport policy priorities, the influence of different actors, barriers, and the role of institutional, economic and other social conditions on the possibility for obtaining a sustainable urban development.*

| *Research questions* | *Plans* | *Articles* | *Interviews* |
|---|---|---|---|
| To what extent is the issue of sustainable development addressed in the investigated sources of evidence? | In all the land use plans, in the white paper, but hardly in the transport packages. | It is. In nearly half of the articles explicitly, and in many of the remaining articles implicitly. | As this was a topic of the interview guide, this is obviously touched upon in all interviews. |
| How do the sources of evidence interpret the concept of sustainable development | Mainly as an environmental challenge and objective, although some plans also mention social and economic aspects. | Quite often not specified. When specified, either environmental, or a combination of environmental, social and economic (efficient resource use). None writes about competitiveness as part of the concept. | Mostly either environmental or combined environmental, social and economic. But two (both from the transport sector) talk about the concept mainly in economic terms, although not with a focus on local/regional competitiveness. |

| *Research questions* | *Plans* | *Articles* | *Interviews* |
|---|---|---|---|
| Is sustainability pointed out as the overarching goal or as something that has to be subordinated to or adapted within the frames of a different, competing goal? | In the land use plans, sustainability goals are expressed increasingly prominently in the most recent plans. Environmental sustainability is considered to be beneficial to growth. In the transport plans, the concept is hardly referred to. | Not specified in that way. | Not said explicitly. |
| Which sustainability problems/issues do the sources of evidence identify as the most important ones to address? | Car dependency and the growth in car traffic highlighted as a challenge in all plans. Land use plans and white paper also address nature conservation, waste, energy in buildings and heritage. | Sustainable mobility is identified as a main challenge alone or together with saving nature and urban green structure in nearly two thirds of the articles addressing the concept. Only a few articles address 'closed loops' or focus only on the green structure. | Energy use and greenhouse gas emissions are in focus in all interviews. Many point at changing from car to more environmentally friendly transport modes as important, some also talk about curbing the growth in the amount of transport. Protection of natural areas, city attractiveness and social cohesion (avoid segregation) is also mentioned by some. |
| Which among the policy measures mentioned in the sources of evidence are described as responses to the challenge of a sustainable urban development? | In the land use plans and the white paper: densification and development close to public transport nodes. In the transport packages: improving public transport. | Compact city development, development close to public transport nodes, improved public transport. Some authors stress that an overall densification strategy must be practiced with prudence so that intra-urban green areas and housing qualities can be secured. | Densification and concentrating development close to public transport nodes, improving public transport, improving bike path network, securing urban green areas, restrictions on car use. |
| To what extent do the sources of evidence support the compact city model or are critical to this model? | Strong support of the compact city model in all land use plans and the White Paper. The transport packages are consistent with this but do not focus on spatial strategies. | 83 % of the articles expressing a standpoint to the compact city model are more or less supportive to this model. | The interviewees generally endorse the compact city as a model for future urban development in the Oslo region. Some disagreement as to the degree of monocentric vs. polycentric densification. |
| Do the sources of evidence make references to any causal influences of land use on transport? Are any of the relationships that exist according to state-of-the art research denied? | All land use plans and the White Paper make explicit reference to land use-travel relationships, these references are in accordance with state-of-the-art knowledge. No mentioning of such relationships in the transport packages. | One sixth of the articles deal explicitly with land use – transport relationships, but many more have such relationships as parts of the premises for their arguments. About 80 % of the articles dealing with such relationships demonstrate or refer to their existence. | All interviewees assume that densification rather than sprawl is preferable in order to reduce car travel. Most of them also assume that a central location of dwellings and offices is favorable. One interviewee still holds that workplace decentralization reduces commuting distances. |

| *Research questions* | *Plans* | *Articles* | *Interviews* |
|---|---|---|---|
| To what extent do the sources of evidence support road capacity increases, restrictions on the use of cars in urban areas and/or increased investments in public transport services? | All plans, packages and the White Paper support increased public transport investments, and at least six of them support urban highway development. The White Paper and the Akershus environmental plan seem to presuppose road development without explicitly supporting. Bike path improvements is addressed in the White Paper but much less, or not at all, focused in the remaining documents. | Only two of the 101 investigated articles supports road development, and then combined with improved public transport in order to lead traffic outside neighborhoods. Among articles taking a standpoint on transport infrastructure development, two thirds go for public transport improvement and one third support a halt on road development, road pricing and/or limited parking. | All interviewees support increased public transport investments. Four are more or less positive to road capacity increases, six are against, and one does not state clearly. Four interviewees support road pricing, some also other restrictions. |
| Do the sources of evidence make references to any causal influences of transport infrastructure investments on transport? Are any of the relationships that exist according to state-of-the art research denied? | Most of the plans implicitly assume that better public transport reduces the growth in car traffic. None of the plans mention the traffic-generating effect of road capacity increases in congested areas, except the Akershus environmental plan. | Only one article deals explicitly with such influences, referring to induced travel due to road building as well as reduced traffic due to transit improvement. | Some of the six interviewees who are skeptical to road capacity increases say that this will lead to increased traffic, whereas one of them says this is uncertain. The other opponents to road building probably also assume that wider urban roads leads to more traffic, but they do not explicitly say so. |
| Do the sources of evidence include policy measures influencing the spatial content of urban development that are not discussed in relation to the challenges of sustainability? In case, which measures? | All plans except the Akershus environmental plan include some issues not discussed in relation to sustainability: Road building and the growth in the building stock. | Less than half the articles dealing with urban spatial development discuss this explicitly in relation to sustainability. Many of the remaining articles discuss highly sustainability-relevant issues and recommend solutions in accordance with widely held sustainability principles. | This question is not relevant to the interviews. |
| Do the sources of evidence mention any barriers to the achievement of a more sustainable urban development? In case, which barriers? | Barriers are not much in focus in the documents. Fragmented land ownership is mentioned as a possible barrier to densification, the need to maintain a delicate consensus a barrier to changing the Oslo Package 3, and lack of state transit funding a barrier against Akershus municipalities' motivation for densification. | Four out of ten articles mention barriers. Lack of coordination (horizontal and vertical), increasing influence from market forces, planners' lack of skills and knowledge are mentioned. Few, if any, address uneven power relations as a barrier. | Especially lack of coordination, but also lack of political willingness and contested knowledge claims are mentioned. |

| *Research questions* | *Plans* | *Articles* | *Interviews* |
|---|---|---|---|
| Do the sources of evidence indicate an aim at a high or low growth in the metropolitan population and/or building stock? Is the desirability of growth being questioned? | The plans assume, and apparently approve of, a high population growth, resulting in growth in the building stock. Per capita growth in floor area is not mentioned, except in the Akershus environmental plan where this is mentioned as a part of a general topic of sustainable consumption to be addressed by the Ministry of Finance. | Only a few articles from the first part of the period question the desirability of growth, and only three of these deal with growth in the building stock. | None of the interviewees regard growth in the population and/or the building stock as a problem. |
| To what extent are the sustainability measures mentioned in the *plans and policy documents* linked with measures for implementation? | The land use plans protecting Marka and local green areas (municipal plans and local development plans) are legally binding. The transport packages include funding mechanisms. | Not relevant | Not relevant |
| To what extent do the sources of evidence focus on the influence of institutional frameworks in promoting or counteracting a sustainable urban development? | The Oslo municipal plans call for better coordination with surrounding municipalities, Akershus plans mainly for better coordination across sectors. The transport packages are themselves results of attempts for more vertical and horizontal coordination (although criticized for being insufficient). | One third of the articles deal with institutional frameworks to some extent, all except one call for more coordination, mostly horizontal. Some articles address plan-market relationship, most are critical to increased market influence, a few take a more adaptive stand. Culture and civil society is addressed in very few articles. | Several interviewees call for better regional coordination of land use development. Also, the need for better coordination between land use and transport authorities is addressed. |
| Do the sources of evidence include proposals for changes in institutional frameworks, or reflect recent such changes? | The cooperation on the transport packages was proposed in previous municipal and county plans. The Oslo package 3 and the latest Oslo municipal plan propose a new regional decision-making body. | Several articles ask for changes in institutional frameworks, but none of them includes concrete proposals for new solutions. | Some interviewees propose binding land use plans for the entire region, regulating the distribution of new development, and a regional decision-making body to maintain this. |
| To which extent do the sources of evidence mention economic, structural driving forces of urban development? If mentioned, how are such driving forces assumed to influence urban development? | In the more recent plans, challenges presented by economic globalization are addressed. In the municipal plans and the White paper, compact city development and protection of local environmental qualities are seen as conducive to growth. In the transport packages, mobility enhancement (also along the roads) is seen as crucial | Quite few articles address this, pointing at these impacts of economic forces: centralization, densification, mobility-enhancing policies, and a weakening of planning institutions. | Several interviewees hold that market forces during the latest decade or two have pulled in the same direction as public densification policies. Some also hold that compact city development will make cities more attractive and hence boost growth. |

## 6.2 Interpretations of sustainability

Sustainable development is an issue that is to a high extent addressed and discussed in the investigated plans, articles and among the interviewees. The sustainability agenda has to a high extent penetrated the urban planning discourse in Norway, although the concept is not always mentioned explicitly. The issue of sustainable development has been addressed in all the investigated land use plans and in the Governmental white paper on better urban environment, but hardly in the transport packages.

In the Norwegian planning discourse, the concept of sustainable development has usually been interpreted mainly as an environmental concept. This is especially evident in the professional journal articles. Some documents and interviewees also include social and economic aspects, the latter aspects especially among interviewees from the transport sector. The social aspects are usually about social integration and cohesion, and the economic about efficient resource use. Local economic competitiveness is not claimed to be part of the concept of sustainable development. The aspects focused most on within the environmental dimension are greenhouse gas emissions and protection of green areas.

The overall interpretation of sustainable development thus seems to be fairly well in accordance with the understanding of the concept in the Brundtland commission (World Commission on Environment and Development, 1987). During the decades that have passed since the Brundtland commission's report was published, the dominating interpretation of the concept of sustainability has in some countries been redefined in such a way that the social dimension is interpreted as concern not to offend powerful interest groups, the economic dimension as promoting traditional economic growth, and the environmental dimension as providing an attractive local environment, with little concern for global-scale impacts of local consumption levels and emissions, illustrating a situation where the hegemonic discourse somehow 'eats up' the new alternative discourse (KoshraviNik, 2006). This does, however, not seem to have taken place to any high degree in the Norwegian planning discourse. In Norway, political focus on sustainable development was strong already since the late 1980s, boosted by the fact that the UN Commission that put the very concept of sustainable development on the international political agenda (World Commission on Environment and Development, 1987) was headed by Gro Harlem Brundtland, who was Norwegian Prime Minister from 1986 to 1989 and from 1990 to 1996.

Sustainable development has gained a status as some sort of overarching goal among land use planners and in land use plans in Oslo Metropolitan Area, but has not achieved the same status in transport planning. In the land use plans, sustainability goals are expressed increasingly prominently in the most recent plans. Environmental sustainability is considered to be beneficial to growth. In the transport plans, the concept is hardly referred to. Environmental problems resulting from growing car traffic, notably greenhouse gas emissions, is the sustainability challenge most commonly mentioned in our investigated plans and policy documents, articles and among our interviewees. Saving nature and urban green structure comes next, whereas there is comparatively less emphasis on energy in buildings, waste, 'closed loops', heritage built environment, city attractiveness and social cohesion. The issue

of sustainable mobility has thus had (and has) a prominent position in the Norwegian discourse on sustainable urban development.

Many of the investigated professional journal articles seem to take the sustainability agenda as an implicit backdrop without explicitly mentioning sustainability. This may indicate that sustainability has become so incorporated in the planners' agenda that it is no longer felt to be necessary to explicitly refer to the concept. On the other hand, among most of the plans and policy documents, environmental impacts of road capacity increases and growth in the building stock are not mentioned. Especially growth in the building stock seems to be regarded as a 'natural' phenomenon not relevant to include in the environmental discussion.

## 6.3 Strong support of compact urban development

For a long period, strong outdoor recreation interests have managed to keep the development border against the Marka areas – the very popular forest areas surrounding the city – almost unchanged. Within the municipality of Oslo, this border, which was first introduced in Oslo's 1936 Municipal Master Plan, has remained virtually unchanged during the latest 30 years.

In Oslo's neighbor municipalities too there have been only few and small adjustments of the Marka border. Already in the mid 1980s the Ministry of Environment instructed the affected municipalities to incorporate this border in their land use master plans, based on arguments of outdoor recreation opportunity and nature conservation. In 1993, the national government adopted so-called National Policy Provisions for Coordinated Land Use and Transport Planning, which put increasing pressure on the municipalities to cover their need for development within existing urban area demarcations instead of through outward urban expansion. In Oslo's recent municipal plans, the quest for a transport-reducing and less car-dependent urban development has – in line with the national policy provisions – entered as an additional argument against urban expansion into the Marka areas. Also, the recent county plans of Akershus have given clear signals to the municipalities about the need for a concentrated urban development, especially around main public transport nodes.

Densification and development close to public transport nodes are the main land use measures described in our data material (investigated plans, journal articles as well as interviews) as responses to the challenge of a sustainable development, whereas improving public transport is the dominant transport policy measure. Some sources also emphasize securing urban green areas, improving conditions for biking, and restrictions on auto use.

There is thus a strong support of the compact city as a model for urban development in the investigated plans and policy documents, articles and among the interviewees. In Oslo Metropolitan Area, compact city development is usually interpreted as a combination of inner-city densification based mainly on transformation of harborfront and derelict industrial areas, and densification close to public transport stops in the second-order centers of the region. This is also evident from the interviewees' evaluation of the spatial development that has been taking place since the 1990s. The strong support of compact city development is in line with the findings of Hoftun (2002), who states that the professional and political discourse on urban sustainability in Norway has evolved around the issue of limiting urban

sprawl. Strong discourse coalitions have been formed around the story-lines of "save land" and "transportation", making it difficult for urban strategies placing less emphasis on these issues to gain foothold among planners and policy-makers.

These sustainability-based arguments are supported by cultural trends and lifestyles. The strong outdoor recreation interests in protecting the Marka areas against urban expansion have already been mentioned. There is a long-standing and strong outdoor recreation culture in Norway emphasizing cross-country skiing and walking. Although the tradition of making a trip on foot or skiing in Marka each Sunday, which was very strong in the decades up to the 1980s has maybe become a bit weaker during the latest couple of decades, there is still solid popular support of protecting the Marka areas. In addition, there has been an increasing interest among the population for 'urban culture' and 'cafe life' (Hellevik, 1995; Sjaastad et al., 2007). This rising popularity for urban living has especially been pronounced among young people and middle-age inhabitants whose children have moved away from home. Moreover, one could also speculate that the increasingly multicultural population of Oslo may have contributed to increase the share of the population who prefer other types of housing than the detached single-family house.

In Oslo Metropolitan Area (and to a high extent in Norwegian larger cities in general), the discourses supporting compact city development have converged into a doctrine for urban development (Faludi & van der Valk, 1994). A doctrine comes close to what is often termed as a "hegemonic discourse" within a field of society (Hajer, 1995). In the Oslo region, an urban containment doctrine has prevailed for a long time before the transportation impacts of outward urban expansion entered the Norwegian planning agenda. According to Laugen (2000), the Marka border has all the time since World War II, and maybe even longer, had the status of a planning doctrine guiding urban development in Oslo and its neighbor municipalities.

There is thus a widespread understanding among participants of the Norwegian land use planning discourse that densification rather than sprawl is preferable in order to reduce car travel, and the investigated land use plans and the White paper are clearly based on this as a key premise. A minority of debaters express counter-claims to the state-of-the-art knowledge, but they have only to a limited extent managed to win trough in planning and decision-making. In general, they have not managed to create a sense of doubt about the validity of the claim that densification leads to reduced car travel, compared to sprawl. Such uncertainty might have undermined the political support of compact urban development, since most people do not favor action if arguments appear to be balanced on both sides and there is a clear doubt (Beder, 1999).

## 6.4 Ambiguous transport policy

There has been strong consensus about the need for public transport improvements in Oslo Metropolitan Area, both in the form of rail investments, priority lanes and traffic light priority for buses and streetcars, and better funding of operational costs to allow more frequent departures and generally improved service. In the plans and policy documents, public transport improvements are, however, combined with road building, partly in order to relieve neighborhoods from heavy traffic but also in order to reduce or prevent congestion. Road capacity increases have been contested among professionals but widely supported by politicians. Some interviewees support road

capacity increases, but most do not, and among the journal articles very few support urban road capacity increases. The interviewees' limited support of road capacity increases is evident from their opinions about desirable future transport policies in the Oslo region as well as from their evaluation of the development that has taken place during the latest decade or two. Different types of restrictions on auto use are advocated by a relatively large minority among journal articles as well as interviewees.

The arguments for public transport improvements as a measure to enhance sustainable mobility implicitly assume that better public transport reduces the growth in car traffic. This assumption is thus a premise in all the investigated plans and policy documents as well as for most of the interviewees, although it is seldom discussed explicitly. Transport planners have sometimes argued that better road must be combined with road pricing in order to avoid traffic increase leading to new congestion, but this argument has usually been based on assumption of a general rise in mobility and not by induced travel created by the road improvements themselves. The traffic-generating effect of road capacity increases in congested areas is, however, not addressed in the plans but is mentioned by some interviewees and in one article. None of the sources deny the existence of such relationships, but they are often downplayed or ignored. This knowledge thus seems to have been largely excluded from the dominant discourse. To a higher extent than for relationships between urban structure and travel, the acceptance of knowledge claims about the traffic-inducing influences of road capacity increases in congested areas seems to have been influenced by power relations (cf. Beder, 1999).

## 6.5 Stakeholder influence

Neither the investigated plans nor the journal articles reviewed say much about actors influencing urban development. But in the interviews, this issue is addressed. Apart from national planning and environmental authorities, who for a long time have pushed for urban containment, property developers and other market agents have during the recent decades increasingly been interested in urban densification. The interviews show several examples of how land owners and investors sometimes put pressure on politicians in order to have plans adopted that will allow forms of land use that are less than optimal seen from a sustainability perspective. Sometimes, this results in sprawl, but in the inner city of Oslo the pressure instead leads to loss of green space and poorer housing quality, especially for families with children.

Among local authorities, the municipality of Oslo generally promotes a dense and concentrated urban development. While generally looking positively on the principles laid down in the National Policy Provisions for Coordinated Land Use and Transport Planning, local authorities in suburban and outer-region municipalities often aim for a higher proportion of the total regional development in outer parts of the metropolitan area than what would be preferable from the perspective of reducing car travel. They are also prone to yield to pressure from companies wanting to locate at a higher distance from public transport nodes than presupposed in the regional plans. Such competition for inward investment in regions where the functional city is divided between many municipalities is a well-known phenomenon described in urban theory and political economy literature (e.g. Logan & Molotch, 1996). Arguably, economic globalization and increasing influence from neoliberal ideas has

in the recent decades led to a stronger emphasis among municipal politicians and bureaucrats on competitiveness.

In spite of widespread goals of reducing car travel, the municipalities have usually also lobbied toward national transport authorities for the realization of local road projects. According to Osland & Longva (2009), a fragmented organizational structure and a funding system encouraging local mobilization for state infrastructure funding has induced the municipalities to place less emphasis on goals of increasing the market shares of public and non-motorized modes. The organizational conditions have played the cards into the hands of those local actors who do not want to subdue the use of cars. Since the costs of building the roads – if lobbying is successful – will be covered by the state, it is easy for those actors to argue locally that there is no risk involved in trying to get national road money allocated to projects in their municipality. Thus, the organizational and funding structure creates good political conditions for the local 'road-enthusiastic' parties, at the cost of local actors who would rather prefer a different transport policy.

Whereas there is some disagreement between different parties on transport policy issues (with the left being more negative and the right, especially the Progress Party, more positive to road development), there is a much higher degree of consensus about the compact city strategy. Yet, here too, the Progress Party argues for a relaxation, among others in the form of development in some of the areas now protected by the Marka border. The higher emphasis of the political right on facilitation for car travel reflects more individualistic ideologies in general and a higher importance placed on *negative liberty* than on *positive liberty* (Berlin, 1969). For those parties, the freedom of car drivers to drive unrestricted (negative liberty) is considered more important than the freedom of affected groups from negative environmental and other impacts of this traffic (positive freedom). Generally, the idea of positive liberty is held to be emphasized to a higher extent by those on the left-wing of the political spectrum, whereas negative liberty is most important for those who lean towards the right.

Different sectors within public administration have also pulled in different directions. The Ministry of the environment and its county-level agencies have strongly promoted compact urban development and advocated public transport improvement, while being less enthusiastic about road construction. The transport authorities, on the other hand, promoted a higher mobility in general, thus supporting investments in public transport as well as highways. The Ministry of Transport is generally positive to concentrated urban development, among others because this may reduce the need for investments in infrastructure provision. Notably, the regional agencies of the Highway administration have protested against municipal plans for residential and workplace development at car-dependent locations. On the other hand, the Ministry of Transport and the Highway administration have facilitated road building leading to 'region enlargement' (Engebretsen, 2008) involving longer commuting distances as well as facilitating a more decentralized pattern of development (Strand et al., 2009).

These differences between the two ministries may in part reflect different organizational cultures (Strand & Moen, 2000). In the Ministry of the Environment, the staff of the planning department consists to a high extent of planners, geographers, political scientists, law scientists etc, whereas in the Ministry of Transport economists have a much more prominent position. The latter tend to favor

economic methods for project evaluation, and the recommendations based on such analyses may sometimes deviate from those based on adopted political goals. In general, cost-benefit analyses of transportation investment projects tend to give priority to projects that can in a short term reduce travel times, rather than projects contributing to other social goals (Næss, 2006b).

Environmental organizations have partly endorsed the urban containment policy, but we do not find any strong opposition from the NGOs against car-dependent development projects like out-of-town shopping facilities. There has also been a long-standing trend among environmentalists to oppose densification (because it often leads to loss of intra-urban green areas and sometimes makes up a threat to local environmental qualities (view, outdoor areas, etc.). We do, however, not find any strong support among environmental organizations in Oslo Metropolitan Area of anti-urban or 'permaculture' models of sustainable settlements.

## 6.6 Barriers and conditions for implementation

As mentioned above, the planning legislation provides legal possibilities for protection of areas set aside for non-development against the construction of buildings and major technical infrastructure. There are therefore good formal measures to implement the densification policy prescribed by the land use plans.

Oslo's compact urban development has been in accordance with a similar prioritization in the municipal plans over a long period. According to the Norwegian planning legislation, it is forbidden to establish buildings and technical infrastructure (except for agricultural purposes) in areas set aside for non-development in the municipal master land use plan (i.e. the combined land use category of agricultural, natural and outdoor recreation areas). By avoiding to set aside excessively large areas for development and keeping the developmental areas concentrated not allowing for leapfrog development, the municipalities of Oslo Metropolitan Area (in particular the Municipality of Oslo) have used the planning legislation actively to prevent urban sprawl. The National Policy Provisions for Coordinated Land Use and Transport Planning and the ministerial directive requiring affected municipalities to incorporate the Marka border in their master land use plans have both been important instruments for implementing national goals in the plans of the municipalities of the Oslo region. The possibility for county authorities to object to municipal plans violating these national provisions has also been important.

Within the zone set aside for development, the master plans have been more flexible, leaving considerable room for negotiation between the municipal authorities and developers about the content and design of development on specific sites. The latter has been legally regulated through local development plans. An important point in case is, however, that the limited possibilities for urban expansion ensured through the master plans have increased the motivation of developers for embarking on brownfield transformation project.

The transport packages include funding mechanisms securing that they can be followed up in the form of concrete investments.

While the availability of legal instruments for land use control hardly makes up any barrier to sustainable urban development, the plans, articles and interviews point to other barriers that may prevent the realization of sustainability goals in urban development. Lack of coordination, especially across sectors and municipal borders,

is the most often mentioned barrier to sustainable urban development at a metropolitan scale. Such barriers are highlighted in many professional journal articles as well as among interviewees. There is a widespread opinion that the coordination between municipalities as well as between the land use and transport authorities is insufficient. Better coordination between central and local authorities is also called for by some. Some recent planning documents (the Oslo package 3 and the latest Oslo municipal plan) actually propose a new regional decision-making body; this is also recommended by some interviewees together with a binding regional land use plan. The lack of coordination is considered by our sources to result in environmentally less sustainable land use and transport infrastructure decisions than what would otherwise be the case. Increasing influence of market agents on land use development is also widely thought to counteract sustainability. Few, if any, address uneven power relations as a cause of lack of coordination. Some sources point at lack of political willingness, increasing influence from market forces, fragmented land ownership and contested knowledge claims as additional barriers.

Several interviews and articles hold that market forces have pulled in the direction of densification during the latest decade or two. In most municipal plans and the White Paper, compact city development is seen as conducive to growth (as is protection of local environmental qualities). This reflects an ecological modernization perspective on urban sustainability. Some articles also consider market forces to contribute to centralization, mobility-enhancing policies, and a weakening of planning institutions. The latter will, of course, weaken the capacity for implementing coordinated policies aiming to promote sustainability.

## 6.7 More is always better...?

In our investigated data material, the desirability of growth in the building stock is generally not questioned, apart from the Akershus environmental plan where this is discussed as a challenge, and three journal articles from the early part of the investigated period. None of the interviewees regard growth in the population and/or the building stock as a problem. Growth of the building stock - in absolute figures as well as in floor area per capita - has generally been taken as an assumed good, questioned by virtually no one. Sustainability efforts in urban development have thus been framed (Kaufman et al., 2003) as a matter of obtaining a (partial) decoupling between growth in the building stock and negative environmental impacts.

As can be seen from the above, such a partial decoupling has been obtained in the Oslo region, as a considerable growth in the building stock has resulted in only a moderate conversion of natural areas and farmland into urbanized land. Yet, the densification policy has had its negative environmental impacts. As mentioned above, the intra-urban green areas have been reduced as a result of the compact city strategy, in spite of conscious attempts to channel densification toward areas already marked by technical encroachments. It could of course be argued whether or not a conversion of non-built intra-urban areas necessarily implies a significant loss of environmental qualities. Some authors, e.g. Lund (2001) and Hebbert (2008) have argued that urban districts developed according to modernist planning ideals often include excessively large green areas (especially lawns) of low biological value as well as recreational utility. However, as can be seen in Figure 2.7, many of the lost urban green areas are in the inner parts of Oslo, where greenery is by no means in excess.

Moreover, an important case in point is that many of the urban transformation sites that have made it possible to construct new buildings without making encroachments on natural areas or farmland have been made available because manufacturing industries have moved from Oslo (like most other cities in affluent countries) to poor countries in Asia where labor is cheaper and environmental regulations lax. The partial decoupling between growth in the building stock and negative environmental consequences that has been achieved in cities like Oslo has therefore been conditioned on prior global-scale relocation processes resulting in large encroachments on nature in newly industrialized developing countries. The transport impacts of this development in these countries are also not necessarily favorable, judged against criteria of sustainable mobility.

Growth in transport and mobility has also to a high extent been taken as an unavoidable fact, with sustainability policies aiming at channeling as much as possible of this growth to public transport. Yet, there have obviously also been some efforts to limit - or at least reduce the growth in - the amount of transport. The compact urban development is probably the most salient example of such policies. Economic measures employed so far in order to limit negative consequences of transport (e.g. road tolls in Oslo and some other Norwegian cities and a small carbon dioxide tax on gasoline) have been much more modest.

## 6.8 Concluding remarks

Oslo has broken a long-lasting trend of spatial expansion and has since the mid 1980s followed a clear urban containment policy. During the latest couple of decades, the city – and especially the municipality of Oslo – has managed to combine high growth in population and the building stock with low encroachments on natural and cultivated areas and a moderate traffic growth. The concentrated urban development in Oslo Metropolitan Area has clearly contributed to more sustainable mobility than what would have been the case with a more sprawling pattern of development.

A strong focus on coordinated land use and transport planning in order to reduce energy use and emissions from transport is an important part of the explanation of Oslo's farewell to urban sprawl. In addition, social and cultural conditions necessary for implementing such a strategy have to a high extent been present. During the whole period since the 1990s, there has been a high degree of professional and political consensus about urban densification as an overall strategy for urban development. Within the Norwegian profession of spatial planners, the compact city has obtained hegemonic status as a model for sustainable urban development. There has also been a considerable market demand for more intensive land use within existing urban areas, especially in the central parts of the region. Market agents have sometimes also pushed for greenfield development at locations poorly served by public transport in the outer parts of the region, but the amount of such development has been moderate. Although competition for inward investment makes up an incentive for outer-area municipalities to accept such location preferences, national and regional land use instruments have been able to limit the establishment of new car-dependent residential and workplace areas. In particular, the greenbelt policy for protecting the forest areas surrounding Oslo (the Marka border) and the National Policy Provisions for Coordinated Land Use and Transport Planning have been important. There is nevertheless a widespread opinion among planners and policy-

makers that the regional coordination of spatial development in the Oslo region should be improved.

Whereas land use development has to a high extent been in line with principles of sustainable urban development, the development of transport infrastructure has been more ambiguous, judged against sustainability goals. Along with important improvements in the public transport system (a new metro ring, new streetcar lines and bus lanes, and more frequent departures for streetcar and metro trains) there has also been considerable expansion of the road capacity. Seen from the perspective of sustainability, this combined, and quite costly, strategy has been similar to stepping on the accelerator and the brake at the same time. The general level of mobility has been enhanced, but the shares of car drivers and travelers by other modes have remained more or less the same. Whereas public transport improvement has been backed by broad political consensus, road capacity increases have been contested. In particular, there has been skepticism against urban highway development among land use planners, environmental organizations and politicians to the left. Transport authorities and planners involved in transport infrastructure development in the Oslo region have generally considered road development as a measure to combat congestion; the transport planners have, however, at the same time often argued that better road must be combined with road pricing in order to avoid traffic increase leading to new congestion. During most of the investigated period, road pricing was not on the political agenda, but the latest transport policy deal (Oslo Package 3) opens for higher tolls on urban motoring.

The Oslo region has experienced strong economic growth (for a European city) as well as population growth since the 1990s. Within the fields affected by land use and transport planning, this growth has taken place with relatively moderate impacts on nature and the environment, compared to a sprawling and car-based development. Yet, the decoupling between growth and negative environmental impacts is relative, not absolute. The city is still moving away from important goals of sustainable mobility, albeit at a considerably lower pace than earlier.

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