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*The Quest for environmentally sustainable transport development.
A comparison of 4 cities in 4 countries.*

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Introduction

This paper describe a study of the land use and transport planning in four cities¹ that are renown and prize awarded for their sustainable development efforts: Kristiansand (Norway), Aalborg (Denmark), Norwich (England) and Davis (California, USA). The four cities were compared cross borders and lessons were drawn. The focus of the project has been to explore how land use and transport planning have been used to achieve environmentally sustainable transport (EST)² in cities: “*Transportation that does not endanger public health or ecosystems and meets mobility needs consistent with*

- *use of renewable resources at below their rates of regeneration*
- *use of non-renewable resources at below the rates of development of renewable substitutes.”*

The research question asked was: *How can land use and transport planning be used to create / increase environmentally sustainable transport in cities, what are the barriers for sustainable transport development and what promotes such development?*

The project aimed at answering these questions:

- *How was the connection and interaction between land use and transport in the cities? What effect did planning and policy exert on the choice of transport mode? Was the development caused by a deliberate policy and was it sustainable, and in case how and why?*
- *How could the observed land use and transport development be explained? What were the factors facilitating cycling, walking and public transport; and what were the factors inhibiting more sustainable transport development?*
- *What if any, are the lessons from the case cities for other medium sized cities in Europe?*

The next sections of this paper describe the methodology used in the case study, present and discuss the results from the study and in the last section what can be learnt from the study are discussed.

Methodology

Twenty years have elapsed since the Brundtland report *Our Common Future* was published. In these years the environmental problems associated with private car transport have increased. Car use contributes to the problem of sprawl across Europe, to the continual depletion of fossil resources and to the global CO₂ emissions, as well as local emissions, traffic accidents, noise, etc. A wide gap has been created between our goals and intentions on the one side to the factual evidence with increasing car use on the other.

Land use and transport planning is regarded as an important instrument or measure to achieve the sustainable development goals. There hardly exists a city in Europe without environmentally sustainable city transport as a goal. This study examine how the land use and

¹ Langeland, 2009

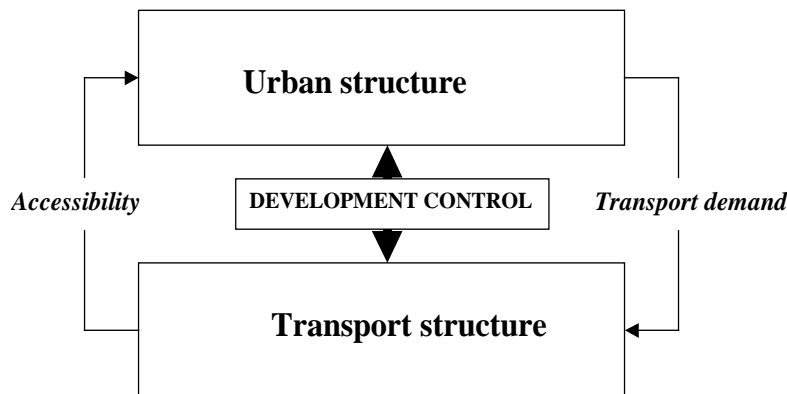
² EST as defined by OECD

transport planning instrument has been used in medium sized cities and what effects it had. There are many hundred such cities only in Europe and it obviously matter in a climate perspective how such cities manage to implement sustainable development policies. Four cities regarded as “Best practice” cities were chosen for the study.

Research approach and philosophy

The study starts with a model of a city that consists of two main elements: *Building Structure* and *Transport Structure*. There is reciprocal relationship or interdependence between the *Building Structure* and the *Transport Structure*. Activities in the *Building Structure* create demand for transport and the *Transport Structure* provides accessibility. This interdependence is crucial for the cities spatial development. *Development Control*, a prime tool for politicians and planners to manage development may influence both of these elements. *Development control* can be applied in an active or passive way according to the understanding of the situation and indeed according to how the politicians in charge look at intervention in the planning and development processes.

Figure 0-1 Model of land use and transport system and control.



Source: Book and Eskildsson, 2001.

The urban development in each case city was viewed as a stream of events over time. The research process identified and described those events that had great impact on development. Each event was analyzed in depth to find the mechanisms that worked together to produce the event and also those forces that represented barriers and hindrances. The analysis of the events focused on the causal relations behind an event and the mechanisms that triggered it. It was a cyclic process confronting the data with case description, redescription, more data, and so on. By placing the events in a time sequence the relationship between the events and the pattern of events that constitute a certain path could be identified and explanations looked for.

The following figure attempts to illustrate this cyclic process.

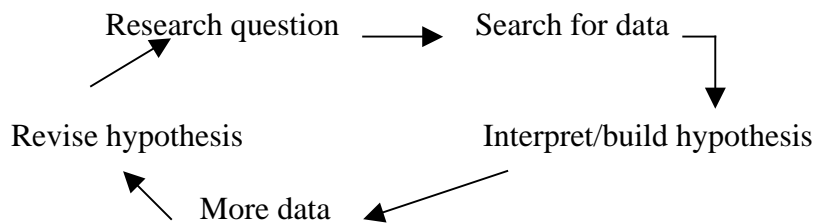


Figure 0-2 The cyclic research process

The research process was both a longitudinal study and cross sectional study of the land use and transport events that formed the city development.

In the nineties planning theory focused on the planning discourse (Healey 1997, Innes 1996), while in the early 2000s a shift towards strategic planning emerged (Albrecht, Healey & Kunzmann 2003). The shift from government to governance is occurring in parallel and overlapping with a shift from public administration to new public management (NPM), and a shift from blueprint planning to strategic planning. This transition implies that people are seen as either *customers* or *consumers* or *citizens* (Hambleton 2006). The weight on each of the three C's will depend on the local context, the issue and the local power relations. Stone's work show that power is structured and exercised in an effort to obtain results through cooperation, not to gain top-down control. He introduced the concepts "*ruling coalition: the informal arrangements by which public bodies and private interests function together to make and carry out governing decisions*" and "*pre-emptive power*" a term that points to: "*power as a capacity to occupy, hold, and make use of strategic position*" (Stone 1988, after Lyngstad 1997)

The spatial planning system in most countries is an important part of the national government set up. How legislation, planning law and the planning tradition and practice focus on land use management was one important issue in this study. How the organization of government, the financing of transport infrastructure and public transport services impact on development another issue. A third issue was how political attitudes to the market and to public versus private solutions impacted on land use and transport policy. To cope with the complex relations both horizontally and vertically, between levels, sectors and layers the following themes were used for cross comparison and analysis:

- The importance of a broad, national, guiding, spatial framework.
- Integration between levels, sectors and layers of planning.
- The role of the rational planning model and planning doctrine.
- Partnerships, collaboration, cross border cooperation and mechanisms.

Land use and transport planning and policy in 4 cities in 4 countries

A general fault with many studies is that they concentrate only on the aims and intentions without evaluating implementation of the plans (Benenson 2009). This study focuses both on the planning process and the dynamic changes in the urban environment, especially the local actors role and actions in the local policy context proved important in the development process on the ground.

I will here only present and discuss the main results from the study. Below is shown an example of a matrix used extensively during the comparison of the cities. Population and economic growth in the city influenced the land use and transport planning process. A city in stagnation produces different policies than a city with growth pressures. Each city is compared using the model above and land use, transport and development control was looked into, also the financing of infrastructure and services was studied in detail.

The results from this study are several paradoxes:

- *The Travel to Work Area (TWA) keeps increasing in all four cities making them more and more car dependent. The trips increase in length, thus more fuel is used and the CO2 emissions increase even in the prize winning “sustainable cities”.*
- *The 3 European cities actively pursue traffic generating road schemes while they for decades have flagged environmentally sustainable transport development and car reduction schemes.*
- *The US city of Davis performs better than the 3 European cities regarding the effectiveness of the land use and transport instrument in a sustainable development perspective.*
- *The US city of Davis has over many years controlled and curbed market forces and spatial development that the 3 European cities seem unable to achieve.*

On the next page one of the comparisons of Land Use and Transport policy responsibilities and organization that led to the above conclusions in the four cities are shown.

Scheme of comparison of policy responsibility and results in the four cities.

City	Norway Kristiansand	Denmark Aalborg	England Norwich	California Davis
Issue	STRONG GROWTH	SLOW GROWTH	SLOW GROWTH	STRONG GROWTH
What was the LU&T connection and interaction?	Car transport was an important driver in the location of business and homes. LU policy adapts to demand for building land. City Centre pressure. CONTEXT: fast economic growth, toll road special. INSTITUTIONS: support car and economic growth.	Car transport was an important driver in the location of business and homes. LU policy adapts to road infrastructure. CONTEXT: periphery with very slow growth. INSTITUTIONS: LU&T an instrument for growth.	Park&Ride well integrated in City Centre shows integrated LU&T planning. Outward urban LU expansion, but LU depends on old transport network. CONTEXT: Norwich historic city. Building land very scarce. INSTITUTIONS: Strong Central Government. Norwich city without LU&T powers.	LU was managed, local T-network planned for all modes. Trunk road bypasses city. CONTEXT: UCD provides growth, no city concern. INSTITUTIONS: Davis has self-rule in LU&T planning.
Land Use Planning	Municipality decides LU plans. AIM: Facilitating growth.	Municipality decides LU plans. AIM: Facilitating growth.	County decides structure plans. AIM: Facilitating growth. Locate new homes.	Municipality decides LU plans, but Referendum for Urban extension AIM: <u>Control</u> growth.
Development Control	DC an instrument in a market-led LU planning	DC an instrument in a market-led LU planning	DC an instrument to take care of listed buildings and keep the position as retail city	DC an instrument to steer / control development towards aims
Transport Planning	Municipality should plan transport structure in the general plan, but relies heavily on Highway Agency	Municipality in cooperation with County produces plans	County makes the Local Transport Plan, the focus of which may not be integrated urban policy	The City Council makes the general plan with transport planning integrated. No mixing of <i>inter</i> and <i>intra</i> urban traffic!
Road Infrastructure & Finance	Parliament/National Highway Agency finances roads, plus user payment. 3 rd generation local user Toll Roads Package	Parliament/National Highway Agency finances roads.	Government finances roads through a bidding process on the Local Transport Plan. Major projects special bidding procedure	The major highways are <u>not</u> an integrated part of the city structure as in the 3 other cities. Davis finances own roads.
Public Transport & Finance Infrastructure Running costs	PT financed by county who decide fares and subsidies. BusMetro infrastructure directly financed by MoT, HA, County and City	PT financed by city after the 2007 reform, before that the county.	PT market solution, but County subsidize some routes. Public Private Service Agreements.	Davis PT student/UCD run TAP Financed by student levy, UCD, and City plus passenger income. An interesting model to try out other places?

Summing up the comparison of the four cities

This study shows how four cities have perceived the problem (aims), how the cities wished to solve the problem (plans) and how the cities have acted to solve the problem (realpolitik). The land use and transport planning and policy making in the three European cities are fragmented and dysfunctional. National institutional structure represents a major hindrance for a more sustainable transport development at the city level. Among the four cities, only Davis has been able to control land use and implement a policy aiming at an environmentally sustainable transport system. Below follow some key comments to the four cities, which have been characterized by these metaphors:

Kristiansand – the tale of two cities

Aalborg – the mother of the famous Charter, but...

Norwich – a puppet on a Government string

Davis – the bike city, well prepared for a climate crisis

Kristiansand – the tale of two cities

The land use and transport planning in Kristiansand “the Sustainable City” has been praised and prized for sustainable development. However the structural institutions have prevented or excluded solutions other than car based plans. Even the seven year Government Sustainable City project failed to achieve its goals. The institutional structures give the actors incentives to work for more road building with the aid of media, organizations and individuals. The tolling will for many years continue to finance a massive road building, which again will contribute to the transformation of land use and transport in the region. The CO₂ emissions keep increasing and will probably continue to do so caused by this transformation. The BusMetro has so far not shifted many people from cars to public transport. Pursuit of growth led to the road building success, but the city failed to reach their sustainability goals and targets. The market-turn and the neo-liberal thinking have supported ad-hoc decisions on private plans, reduced public plan production and undermined steering through the plan hierarchy. “The car has come to stay” is the storyline coming out of the interviews, meaning that the car must be accommodated everywhere, even in the city center. The unprecedented building activity in the city center will generate substantial car traffic and threaten the renaissance city center plan. Kristiansand is at the same time the prize-winning *Sustainable City* and the *Climate Villain*. The *Climate Villain* caption was caused by the rapid increase in CO₂-emissions from transport and subdued in the marketing of the city, which may be said to be *double talk*, or “*the tale of two cities*”.

Aalborg – the mother of the famous Charter, but...

More than 1800 cities have signed the Aalborg Charter, but contrary to the Charter ideals, a market-led land use and location policy has spread homes over a large region and concentrated jobs to highly accessible areas along the major trunk road. Individual car transport is a major driving force in and caused by this transport-geographical development. The forces of sprawl seem stronger than the forces of concentration. Population growth has been low for decades. This lack of growth has pushed the growth interests to use the institutional structure to maximize inward investment. The decision on the 3rd Limfjord crossing is inconsistent or even contradictory to the objectives of environmentally sustainable transport as adopted in the Charter and the Traffic and Environment Action Plan. The Traffic and Environment Action Plan from 1994, with reviews in 1999 and 2005 has all the best

intentions. The same can be said about most of the many EU projects in which the city has participated. Focus has been on how to attract car users to more environmentally friendly modes, i.e. on the “pull” side of a *push – pull* strategy. Hardly any measures that “push”, force or compel people to make the necessary mode change have been discussed. The development in Aalborg has many similarities to that of Kristiansand, but with less growth pressure and without the opportunity to finance road building by tolls. The great success for the Aalborg Charter and the Aalborg Commitments is so far mainly symbolic, with only marginal effect on land use and transport policy.

Norwich – a puppet on a Government string

Norwich is among the Top Ten retail cities in England and very proud of the 5000 Park & Ride places established. Although the *predict and provide* ideology – the traditional basis for road planning in England – should cease as a paradigm, the Norwich Northern Distributor Road has emerged as a traditional road building project to reduce major urban congestion problems contrary to the sustainable development aims and the national guidelines. Land use planning is not integrated with transport planning. When combined with an unpredictable financing of transport infrastructure, a disjointed policy has become the result. The fragmented governance structure for the Norwich urban area both geographically concerning borders, across levels and organizations, and within layers (quangos, NGOs and business organizations) has made governing and a plan-led development very difficult, possibly impossible. The output and outcome of the land use and transport planning processes are very uncertain. The strong Government and formal institutional structure in England, has made Norwich the “a puppet on a Government string”, severely limited by the fragmented institutions.

Davis – the bike city, well prepared for a climate crisis

Davis has kept on a course towards sustainable development and is the US Bike City. There has for years been a contest between fast growth and slow growth. Davis is a “contained island paradise” in a sea of regional sprawl. Davis is unique in several ways, firstly as a cycling city and secondly being totally dependent on the university as job creator. As residents the environment-orientated university staff and students have influenced the city land use and transport policy. The people in Davis have so far decided to follow a slow growth and environmentally friendly development path. The future for Davis will depend on how and to what extent the strong forces leading to sprawl in the Sacramento region will affect Davis. Up to now the city with extensive self-rule has in practice put *Place value* above *Exchange value*. Davis like Ulysses (binding himself to the mast not to be lured astray) has made rules that give the people power over the city council and developers. These rules, among them referendum to be used for urban extension, enhance democracy. Davis has succeeded better than most cities to curb car use and promote public transport, walking and cycling.

Discussion and explanations

The quest for growth.

The four cities were at the start of the twenty first century in different situations regarding growth. Kristiansand was bursting with confidence after a decade of strong growth, however the end of the eighties was different. Aalborg had only increased the population with a few thousand over 40 years, which hardly gave the municipality room for new tasks. The old city of Norwich, now an administrative district in Norfolk County, has had a constant population about 120.000 for many decades while the population outside the city border has grown strongly and doubled the population in the Norwich urban area. The University of California Davis has grown strongly for years and with it Davis. The city of Davis is the only one of the four that has a sharp distinction between the city and the surrounding rural area.

The different growth histories and paths impinge on both the perceptions on how the present situation is and the outlooks towards the future. Agency and actors each with different perceptions of the future act within formal and informal institutions. Sometimes there is congruence between the formal and informal institutions and the results seem rational and goals are achieved. Other times only partial goals were achieved as we repeatedly have seen above in the case descriptions of the four cities. Very often the goals promoting the car were the ones realized, while the aims concerning an environmentally sustainable transport future were not achieved.

Transport, financing of infrastructure and services

Kristiansand Transport Planning

New leaders in 1992 managed to solve the major problem through many years, the trunk road E18 and lack of capacity. The new trunk road, financed by road tolls, was obtained by clever use of the existing institutions and by building stakeholder consensus. The consensus of interests about the Toll Ring and substantial investment in the highway leaves some interests out. Those were the car-less and those wanting shift to a sustainable development course. Parking policy has been a constant, only with yearly adjustments of parking charges to follow inflation.

Aalborg Transport Planning

Road tolls are not allowed in Danish cities. The system of financing roads is by Government grants. The decision on the 3rd Limfjord crossing gives the county opportunity to fight for Government investment money as part of the national highway network system. This may become an important decision in the struggle to get financing as compensation for investments in Copenhagen area. The 3rd Limfjord decision was facilitated by very skilful political maneuver by the county mayor, while the Aalborg mayor opted out of the process.

Norwich Transport Planning

England changed /is changing both transport policy and government structure. It started with the Blair Government introduced the white paper "A New Deal for Transport" where the decoupling of transport growth from GDP growth was sought. In effect road building should

be curbed and public transport improved. Local Transport Plans (LTP) were introduced as the main instrument to implement national policy in the cities. The old system with a very strong central Government, made the policy contingent. Who would get financing where and when could not be foreseen. It remains to be seen if the new Local Transport Plan system is an improvement. Central Government is still very strong/decisive in allocation of road investment money. For years the conservative Norfolk County had to get investment money for roads in the labour city of Norwich, from a conservative Government. With Blair the same conservative Norfolk had to get money for transport projects for a no longer labour city in competition with the problems and projects in the huge urban areas like London, Birmingham and Manchester.

Davis Transport Planning

In Davis highways are of no concern to city council because the trunk road is not passing through the city centre. The City Council is responsible for both solution and financing of local roads, Bike and Walk network and traffic safety schemes. The development of a new housing estate has to pay for connection to existing network for all modes. Hence, the design is up to the developer, except when annexation must be done. Then the developer must put forward a proposal, which is so good that the voters “buy” it. This gives the city administration ample bargaining power against the developer, limited by the development giving adequate returns, i.e. a functioning market. Public Transport in Davis is remarkably good because it is financed and run by the UCD students. The net covers Davis fairly well and the services cost 1\$ per ride, with zero fare for undergraduates.

Financing public transport infrastructure and services

Planners have since the sixties³ seen public transport as a main mode of transport competing with the car within cities (Vigar 2002). Time and time again this has been repeated in policy documents, like Norwegian white papers⁴. However, public transport has continually lost competitive edge of two reasons: *economy and travel time*. While the car costs are decided in the market (except external costs of emissions, accidents, etc.), it is the politicians who decide the price of public transport. They decide the fare level by paying the difference between the revenue and costs of public transport in both Norway and Denmark. The car has become relatively cheaper to public transport over many years. Also regarding travel time the car has gained relatively to public transport. The public transport travel times door-to-door in the cities are in general twice (between 1.5 and 3 times longer) compared to car travel times (see also CfIT 2004).

How to explain the findings?

This study shows that there is a lack of integration, of comprehensiveness, of holistic thinking. It reveals that the need for changes is first and foremost changes at the national level – the devolution of power to the cities is my preferred solution. An effective comprehensive planning that can underpin the development of a balanced transport system for all modes integrated with the land use is required.

³ First stated by Barbara Castle who was Minister of Transport, GB.

⁴ E.g. St. meld. nr. 26 (2001-2002) Bedre Kollektivtransport

The fragmented institutions set high demands on the ability to govern and the ability to take the opportunities given. This requires knowledge, competence and the ability to build networks and coalitions to create support in governance processes. With a greater influx of “private” planners and more emphasis on the behavior of private actors in the market, the indications are that this is a trend that weakens public planning and it increases the uncertainty and contingency.

Another major finding is that the main function of the land use and transport planning system in the three European cities is to support and facilitate inward investment. Land use planning functions to keep the supply of land for building as high as possible given the local constraints. Transport planning has two interconnected purposes: one purpose is to acquire money for road investments from the Government and Parliament, and the other is to secure a well functioning and effective road network, free for congestion. The impacts of land use and transport planning in the three European cities differ. In Kristiansand the toll collection is providing the city with a high class, very traffic generating motorway system. Aalborg already has a motorway through the city, which strongly influences where jobs and people locate. The 3rd Limfjord crossing will further influence land use and strengthen car dependency. Norwich urban area has not got money for road building for years. Congestion is therefore worse than in the other cities. Still the city has managed to stay in the *Top Ten* of English retail cities, partly due to 5000 Park&Ride places established.

The development in Davis can be explained with the city’s independence from higher levels. The principle of subsidiarity is part of the US constitution implying that decisions should be taken at the lowest competent level. The City of Davis has used this principle to control land use and urban extension by a referendum.

Summing up the discussion.

The discussion can be summed up in a few sentences. Firstly, the quest for growth and inward investment has ruled the land use and transport development in the three European cities. In this growth perspective the car has been a major driver, wanted, supported and facilitated by the land use and transport planning system.

Major efforts to create a more environmentally sustainable transport development have been done as the *Sustainable City* project in Kristiansand and the *Aalborg Charter and Commitments* are prominent examples of. The evidence on the ground, however, still shows an unsustainable trend and an increasing gap between goals and achievements. The Norwich Local Plan from 2002 tries to readdress this with a mode hierarchy putting walking and cycling as the top modes: “*A key element of the strategy is the adoption of a hierarchy of transport modes in which, as a general principle, greatest priority is given to transport modes with the least environment impact. The mode hierarchy is:*

1. *walking*
2. *cycling*
3. *public transport*
4. *taxis*
5. *essential motor vehicles*
6. *non-essential motor vehicles”*

Time will tell if this mode hierarchy will become the guiding principle for land use and transport planning in the Norwich district or urban area. In Aalborg a similar mode hierarchy was launched in the beginning of the eighties, but it soon disappeared from the planning documents. As such the mode hierarchy introduced in Norwich represents another effort to change the former path. The question is if it will challenge the car-led land use and transport planning and facilitate a trend break, or will it only be a symbol of the right “sustainable” intentions to conceal the business as usual planning practice?

Lessons from the 4 cities

The first lesson is that the lack of goal achievement in the three European cities is caused by the institutional structure and the fragmentation of public administration with tasks and responsibilities separated by sectors, levels and layers giving skewed opportunities and incentives. The car mode comes out as the winner of this system. There is also a lack of a national framework providing *alternatives* to this car-fuelled development possible, in effect the national policies in all three countries make sustainable development illusionary. Land use has become *market-led* in the three European cities and transport has been *finance-led* in the sense that they rely on and strive to get money for road building from Government.

The City of Davis has over many years managed to follow a unique land use and transport-planning path. It is a success story regarding cycling, which is all the more remarkable happening in such an extremely car dependent society as California. The most important lesson from Davis is the example of direct democracy – an example of “*power to the people*” well worth studying.

It is extraordinary how Davis has managed to control land use and prevented edge developments, and how cycling has been maintained as an important mode in a country totally reliant on cars. There is a lot to learn from Davis, not as a direct transformation of the Davis experience, but as an inspiration to facilitate change in the three European cities where the trend is increasingly unsustainable.

The main obstacle for change is our dependency of the car in everyday life, which over the years has embedded the car deeply in the structure. The vested interests in keeping the present land use and transport planning system are strong, so changes won’t come easily.

Literature

Albrecht, L., Healey, P., & Kunzmann, K.R. (2003) Strategic spatial planning and regional governance in Europe. *Journal of the American Planning Association*, 69(2) 113-129.

Benenson, I. et al, (2009) *Does planning matter?* Paper presented at AESOP Conference, Liverpool 2009.

Commission for Integrated Transport. (2001) *European best practice in delivering integrated transport* London UK

European Environment Agency (2006) *Urban sprawl in Europe*. EEA Report No. 10/2006

European Environment Agency (2008) *Climate for a transport change*. EEA Report No. 1/2008

Hambleton, Robin *The new city leadership – new opportunities for planning?* Paper to the AESOP/ACSP conference 8-12 July 2003, Leuven, Belgium.

Healey, Patsy (1997) *Collaborative planning: Shaping Places in Fragmented Societies*. Macmillan. London.

Innes, Judith Eleanor (1996). *Planning Through Consensus Building: A New View On The Comprehensive Planning Ideal*. In: *Journal of the American Planning Association*, 62 (4): 460-472. American Planning Association. Chicago, IL, USA.

Langeland, A. (2008) *The Quest for environmentally sustainable transport development*. PhD thesis, Aalborg University

Lyngstad, Rolf (1997) *Den kommunale tenkemåte*. Dr philos avhandling ved Institutt for Statsvitenskap, Universitetet i Tromsø. Høgskolen i Bodø.

St. meld. nr. 26 (2001-2002) Bedre Kollektivtransport