

Summary:

Sustainable Land Use and Transportation Strategies?

Introduction

The subject of this study is sustainable land-use and transportation planning. Increasing car-use is not sustainable. This report describes how 5 european cities have tried to develop and implement strategies for reducing car use and instead promote public transport, cycling and walking.

The focus of the study has been strategies, instruments, planning tools and effects, rather than planning processes, institutional aspects or local factors. The project is financed by the Swedish National Road Administration.

We have looked for Nordic and European cities with at least two or more characteristics:

- *Positive results for modal split development*; i e reduced car use, increased use of public transport, cycling and walking.
- *Positive development of land use*; i e strategies that promote human activities in city centres, high density land use in areas with good access to public transport and coordinated regional land use and transportation strategies.
- *Innovation*; i e development of the planning system, use of methods, instruments and planning tools.
- *Size comparable with Nordic cities*; i e population and area.

The report includes examples from Norway (Bergen and Jæren), Sweden (Lund), Germany (Freiburg) and the Netherlands (Groningen).

Summary of findings from 5 cities

For each of the cities we have made a summary of the following:

1. How extensive have different *policy instruments* been used?

	Not extensive
	Extensive
	Very extensive

2. Short description of *planning instruments and tools* implemented in the cities.
3. Short description of *documented effects*.
4. Short description of *success criteria*.

Freiburg

Freiburg; 200 000 inhabitants, a university city located south in Germany; demonstrates an unusual positive development for modal split over the last decades. Long term coordinated land use and transportation strategies; especially development of public transport system (tram) in combination with high density land use and strategies for promoting cycling and pedestrians in the city centre have led to results.

Freiburg: Policy instruments, planning tools, effects and success criteria.

Freiburg						
1. Use of different policy instruments ?	1 Land use	2 Infra-structure	3 Manage-ment	4 Infor-mation	5 Attitudes	6 Pricing
2. Planning instruments and tools	Car free zones in city centre Development of terminal area in city centre High density land use in development areas Development areas coordinated with public transport system	Extensive system improvements in public transport system; tram / city-rail and regional railways Park / bike and ride-facilities Cycling lanes Main ring roads Less parking in city centre	Public transport priority Parking facilities for bikes Reduced speed limits for cars	Information of park-and-ride facilities by main roads New organization of public transport coordinated with regional information system	Promoting walking and cycling	New rates for public transport with "environmental friendly tickets" Higher rates for parking
3. Effects	<ul style="list-style-type: none"> • Increased number of cyclists; 70 000-140 000 from 1970-1994. • Local public transport increased with 80 % from 1984-1993. • Decreased use of car to city centre (in % of total); 43 % - 34 % from 1976-2000, in spite of increased car ownership of 46 %. • Attractive areas in city centre for pedestrians and cyclists. 					
4. Success criteria	<ul style="list-style-type: none"> • A compact city core: A good basis for environmentally sound strategies. • Understanding of crisis: Not only development of infrastructure for car use in the 70-s. • Long term strategies: Desire to protect city core already in the 50-s. • Public participation: Solid ground for political determination. 					

Groningen

Groningen; 175 000 inhabitants; a university city north in the Netherlands; have achieved significant results promoting cycling in combination with traffic management and regulation of car use with physical barriers dividing the city in 4 different zones. In the province of Groningen they have also strengthened regional planning strategies.

Groningen: Policy instruments, planning tools, effects and success criteria.

Groningen						
1. Use of different policy instruments ?	1 Land use	2 Infra-structure	3 Manage-ment	4 Infor-mation	5 Attitudes	6 Pricing
2. Planning instruments and tools	High density developments Development of terminal area in city centre Car free zones in city centre Strengthened regional planning and development of node-strategy Use of ABC-principles	Extensive regulation - city divided in 4 zones Park-and-ride facilities Improved lanes for cycling Less parking spaces for cars in main roads and in squares Building of indoor parking facilities. Reduced number of lanes for cars in streets.	Bus-priority Physical barriers for preventing car use Facilities for parking bikes and traffic signals for cyclists Traffic management Strengthened regional coordination of public transport	Information of park-and-ride facilities by main roads.	Campaigns and travel plans for firms with more than 100 employed	Introduction of economic incentives for travelling with public transportation for employed in public sector
3. Effects	<ul style="list-style-type: none"> • Immediate effect (1977): Through traffic completely removed from city centre. Car use in city centre reduced by 44 %, increased car use outside the city by 55 %. • More than 50 % of work trips by bike. • Public transport increased by 12 % weekdays to city centre after 2 years (1979). Car use (of total trips) to city centre reduced from 35 % in 1976 to 24 % in 1997. • Less noise and pollution in central areas. Increased feeling of safety for cyclists and pedestrians. • Still 84 % of trips to Groningen by car in 1990 (from outside Groningen). 					
4. Success criteria	<ul style="list-style-type: none"> • Compact city core: A good basis for environmentally sound transportation. • Understanding of crisis: Planned ring roads not implemented. • Economic sound strategies: Less need for extensive investments. • Public participation: Extensive information to inhabitants about strategies. • Effective strategies: Short term good effects => Critics must give in. 					

Lund

Lund; 100 000 inhabitants (municipality); a university city in southern part of Sweden. Known for innovative strategies and mobility management measures in recent years. Some documented positive effects for modal split after only a few years indicate good prospects for changing trends.

Lund: Policy instruments, planning tools, effects and success criteria.

Lund						
1. Use of different policy instruments ?	1 Land use	2 Infra-structure	3 Manage-ment	4 Infor-mation	5 Attitudes	6 Pricing
2. Planning instruments and tools	New develop-ments close to city centre (biking distance) Land use strategies coordinated with important routes and nodes in public transport system	Better lanes for cycling Strengthened public transport facilities Intermodale terminals Park- / bike-and-ride facilities	Priority for bus New public transport routes: bus and train (region) New parking strategy	Centre for cyclists Road information technology project Car-pools and transpor-tation demand management project	Information campaigns: - Bike is a solution, not a problem - Nice driving - Tele-commuting - Environ-mental learning in drivers education Environ-mental friendly purchase of transport services Coordinated distribution of goods	Public transport rates based on zones. Cheapest adult price kr (SEK) 10,-
3. Effects	<ul style="list-style-type: none"> • Calculated decrease in car use; 12 M km in 2005 and 70 M km in 2020. • Calculated decrease in pollution of HC, NOx og CO₂ • 10 % of inhabitants have changed travel pattern. • Car use is reduced by 1 % from 2000-2001 • Public transport has increased by 3,4 % from 2001-2002. 					
4. Success criteria	<ul style="list-style-type: none"> • Compact city core: A good basis for environmentally sound transportation. • Package of planning tools: Comprehensive approach will increase effects in a longer term. • Public participation: Extensive information campaigns. • Scientific documentation of implemented strategies and effects. 					

Bergen

Bergen; 211 000 inhabitants; a university city on the west coast of Norway; the first city in Norway to implement a toll ring (1986). The toll ring made it possible to finance extensive infrastructure projects (main roads). Now revised strategies include light rail. No positive effects on modal split yet.

Bergen: Policy instruments, planning tools, effects and success criteria.

Bergen						
1. Use of different policy instruments ?	1 Land use	2 Infra-structure	3 Manage-ment	4 Infor-mation	5 Attitudes	6 Pricing
2. Planning instruments and tools	High density strategy for city area Node strategy for new developments close to existing centres and nodes in public transport system	New extensive main road system Extensive plans for city rail / light rail New lanes for cycling Environmentally sound strategies in Bergens-programmet (package of strategies)	New organization of public transport companies Public transport priority			Toll ring implemented in 1986; first city in Norway New toll ring agreement from 2001 Road pricing discussed, but not implemented yet
3. Effects	<ul style="list-style-type: none"> • The toll ring made extensive infrastructure projects possible. • Negative development of modal split; increased car use and reduced public transport. New light rail strategy can possibly change this development. • Uncertain effects for car use, good accessibility for cars on short term, not any significant restrictions for car use (parking or road pricing) yet. • Implemented effective main road system. 					
4. Success criteria	<ul style="list-style-type: none"> • Good political work / cooperation between state and local authorities for financing infrastructure projects; implementing toll ring agreements. • The story from Bergen is not a success story yet, positive change in modal split can be achieved on a longer term, if authorities can: <ul style="list-style-type: none"> ○ Stick to land use and transportation strategies over a longer period; i.e. implement light rail strategies and land use developments with high density in nodes of the public transportation system. ○ Implement restrictive tools for car use; road pricing or parking restrictions. ○ Improve regional land use and transportation planning strategies. 					

Jæren

Jæren; Stavanger and Sandnes are two cities (grown together) on the west coast of Norway; 170 000 inhabitants. 10 municipalities together with county authorities have cooperated in making of a comprehensive land use and transportation plan (2000) including land use and transportation strategies for the next decades.

Jæren: Policy instruments, planning tools, effects and success criteria.

Jæren						
1. Use of different policy instruments ?	1 Land use	2 Infra-structure	3 Manage-ment	4 Infor-mation	5 Attitudes	6 Pricing
2. Planning instruments and tools	Coordinated regional plan for land use for 10 municipalities in the city region; with fairly strong directions for land use Transformation of industrial areas to new developments New developments coordinated with public transport system	Plans for double rail tracks Plans for city rail / light rail Plans for better cycling lanes Plans for new main roads	New organization and route plans for bus system			Toll ring implemented; strengthening the financial basis for infrastructure plans New rate system for public transport Reduced prices for youth using public transport
3. Effects	<ul style="list-style-type: none"> • Effective management of land use policies in 10 municipalities; i e veto if the regional plan is not followed. Balance between development areas and protected areas obtained. • Positive effects from implementing reduced prices for youth using public transportation. • Negative development of modal split; increased car use and reduced public transport. New light rail strategy can possibly change this development. • Uncertain effects for car use, good accessibility for cars on short term, not any significant restrictions for car use (parking or road pricing) yet. 					
4. Success criteria	<ul style="list-style-type: none"> • Understanding of crisis: Municipalities need to cooperate on land use and transportation strategies. • Long term organization of regional planning; good knowledge of land use and transportation instruments and effects and political coordination / cooperation. • Positive change in modal split can be achieved on a longer term, if authorities can: <ul style="list-style-type: none"> ○ Stick to plans over a longer period. ○ Implement restrictive tools for car use. 					

Conclusion

The study reveals that implementation of certain policy instruments and planning tools can reduce car-use, have the desired effect on modal split (especially for trips to city centre) and can also contribute to positive environmental effects.

In addition, following factors are important for achieving good results: Physical land-use pattern, understanding of challenges (crisis), political support and determination, scientific documentation and use of integrated approaches (implementation of many tools / instruments).

The strategies, tools and instruments pointed out in this report could also be implemented in Swedish cities and metropolitan areas.