# **Urban planning**

The planning of our towns helps to create the framework provided for traffic. However, urban planning will have little effect on the volume of bicycle traffic unless the conditions for bicycle traffic are at the same time significantly improved.

Furthermore, changes in land use and settlement patterns are slow. Nevertheless urban planning can have an immediate and large transport impacts when major traffic generating functions are to be located, and thereby influence accessibility and conditions for cyclists.





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## Public management and planning

Urban sprawl has contributed to increasing distances between homes and destinations, and this has led to a more use of cars. The Danish government has defined a number of overall targets for physical planning in Denmark with the aim to reduce energy consumption by transport and the pollution it causes, while at the same time retaining a wide range of retail outlets 75. The main aim is that new housing can only be placed within existing urban areas and zones designated for urban development, while industrial and commercial building only can be erected in regional and municipal centres.

In the metropolitan area of Copenhagen housing quotas lay down binding guidelines for urban development in the individual municipalities and for the placing of urban functions of regional significance. The objective is that both housing and industrial/commercial developments should be concentrated in

New housing close to stations result in more train passengers.

areas with easy access to public transport. Despite this, urban development in the metropolitan area has hitherto tended to take place in areas less advantageously located in relation to public transport <sup>6</sup>.

Studies have shown that more will cycle if a town has more than 10,000 inhabitants, is densely populated and circular shaped, has no hills, and has most workplaces in the town centre <sup>56</sup>. Building site on the outskirts of the town.

Outside the metropolitan area it is up to the individual municipality to determine development and urban renewal within existing town boundaries except for retail outlets and firms that have special requirements with respect to location.

## Population, density and the shape of towns

The topography has a great influence on the volume of bicycle traffic. If the town is flat, a lot of people cycle, while in a hilly terrain there is not much cycling <sup>53</sup>. In fact, topography can explain more than two thirds of the differences in bicycle use in Danish towns (further details on page 96). On the other hand, the size, density and shape of the town have only a limited effect on the volume of bicycle traffic in larger towns.

Results from modelling using data from travel surveys of larger Danish towns with more than 10,000 inhabitants show that cyclists constituted a little over 20% of all traffic irrespective of the size of the town. For larger Danish towns there is no rela-





tionship between population and the share of trips made by bicycle <sup>56</sup>. However, a larger and larger share chooses public transport with increasing population, while the share of car trips falls. For towns with less than 10,000 inhabitants the share of bicycle traffic increases with population, as an increasing number of destinations will be situated within the town and therefore within a reasonable distance. The share of bicycle use in larger towns varies according to the distance between home and town centre. The closer to the town centre people live, the more they tend to cycle <sup>41,56</sup>.

A more dense land use produces shorter distances between homes, workplaces, shops etc. At the same time higher population density means an increase in the customer



A village has only few urban functions, so villagers often have to shop, work etc in other towns.

basis for local services, thereby reducing the need for longer trips. The higher the population density, the more people choose public transport and the fewer choose to go by car. On the other hand, when the number of inhabitants per hectare rises from 10 to 25, there is little effect on the volume of bicycle traffic, which has been shown in model predictions to rise by only 20% <sup>56</sup>.



Mode choise in Danish towns 1993-97 <sup>15</sup>



Residents transport in Århus depends on the location of the home <sup>41</sup>. Numbers is no. of travelled kilometres per person per day. An urban structure, in which a large share of housing is concentrated in narrow ribbons along public transport routes, will result in short walking distances to and consequently a high standard of public transport.

The amenity value of locations near sea or lake also contribute to the creation of ribbon developments in Denmark. However, trip lengths are considerable in ribbon towns and this means a high degree of dependence on motorised transport. Such towns will therefore have fewer cyclists than towns with a more compact shape.

#### Location of workplaces

Other things being equal, a balance between the number of people in employment and the number of workplaces will mean least commuting. According to experience in England, however, this does not have much effect on passenger kilometres and mode choice. The placing of people's homes has a stronger effect on passenger kilometres than where the workplaces are situated <sup>132</sup>.

Studies of commute made by office workers in the metropolitan area of Copenhagen show that the percentage of walking and cycling employees increases with the percentage of employees live close to their work <sup>42, 47, 80</sup>. Employees in public service live closer to their work than employees in the private sector. More residents in the city centre live close to their work than in the suburbs.

Enterprises situated in town centres have more cycling employees than enterprises on the outskirts. On the other hand, placing in relation to public transport terminals has no effect on the number of cyclists.

In the Netherlands the government has drawn up guidelines for the sit-

Almost twice as large a share cycles to office in the city centre as at the office 5 km from the city centre.





ing of enterprises and the extent of car parking provision on the basis of environmental considerations. The aim is to co-ordinate the transport requirements of enterprises with the accessibility of the transport system in order to achieve the optimal environmental effect <sup>77</sup>. All existing and future enterprises are categorised according to how accessible they are by public transport and car. Three categories of location have been defined:

- A. Locations with high-standard public transport and low accessibility by car, permitting a maximum of 1 parking space per 10 employees.
- B. Locations with high accessibility both by public transport and by car, permitting a maximum of 1 parking space per 5 employees.
- C. Locations with high accessibility only by car with unlimited parking spaces.

In existing commercial and industrial areas a voluntary co-operation between enterprises and public authorities seeks to limit parking opportunities. Companies with many employees per square meter or many visitors per square meter and with little dependence on goods transport are placed in category A, while category C is reserved for industry and distribution and is not allowed to contain office workplaces and retail trade.

This policy has been applied in, for instance, Amsterdam, where attempts are also being made to improve conditions for cyclists. As early as in the general plan from 1935 the aim was that it should be possible to cycle from home to work in less than 30 minutes. For this reason the city has for many years been developing a system of cycle routes, which has in a number of instances resulted in curtailments in the capacity of the road system 78. Car traffic is expected to grow by 70% if there is no public intervention, but the location policy and the maximum parking norms will reduce this by 23% <sup>40</sup>.

## **Location of shops**

Fewer cycles to shops than for other purposes, as shopping is usually a matter of many, very short trips that Danes often make on foot. But at the same time many people often choose not to cycle on shopping trips of the same length as other cycle trips. The great majority of shopping trips start from the home. Few people shop on their way home from work.

The use of cars to reach individual shopping centres varies a good deal according to its catchment area. The

Large shops must no longer be established in Denmark.



Share of employees living near by Mode choice related to percentage of office workers living within 6 km of 17 workplaces in Greater Copenhagen <sup>42</sup>.

location of the individual shopping centre is of less importance for the total shopping patterns of households. If a car is available, people choose a shopping centre outside walking distance, if the range and



prices of goods in the nearest shopping centre do not suit them. A Norwegian study has shown that while 50% of the population could shop for their everyday necessities within 500 metres of their homes, only 27% did so <sup>46</sup>.

In Denmark it is very difficult to get permission to establish new food outlets of more than 3,000 square metres and non-food outlets of more than 1,000 square metres. The planning law and system help to maintain a decentralised structure and to stabilise the number of retail outlets, which would otherwise fall.

Cyclists only spend slightly under half as much money per shopping trip as motorists in three Danish town centres <sup>96</sup>. On the other hand, cyclists shop more frequently in town centres. The traffic to large shopping centres and hypermarkets on the outskirts of towns is far more car-based than traffic to shops in town centres. One reason is that shopping centres and hypermarkets have far bigger catchment areas than other outlets, which means that on average customers have to travel further.



Mode choice on shopping trips in Denmark 1998<sup>22</sup>.

The bicycle is rarely used to shopping centres on the outskirts of the town.





The bicycle is often used to shopping centres in the town centre.