

Urban Mobility Strategy



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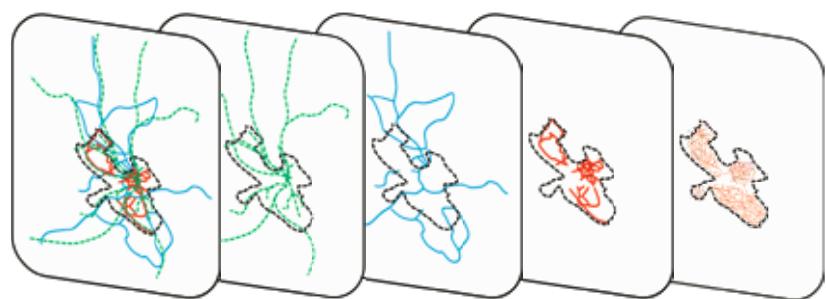
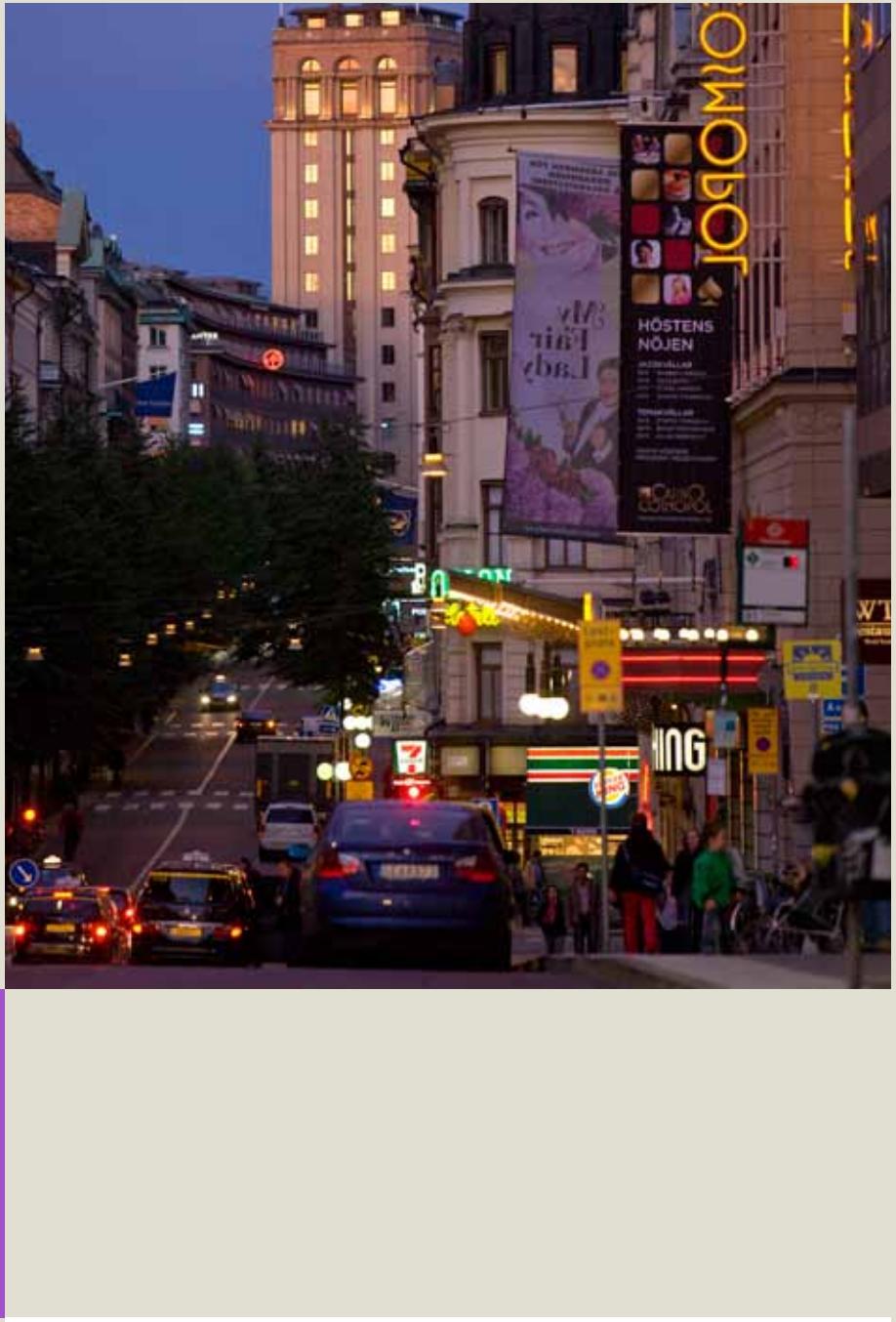
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The primary transport system

Metro and rail traffic (the Swedish Transport Administration and Storstockholms Lokaltrafik (SL), Stockholm Public Transport)

Primary road network (the Swedish Transport Administration and the City of Solna)

Primary road network (the City of Stockholm)

Local street network (the City of Stockholm)

Introduction

Stockholm is growing. Forecasts indicate that the City of Stockholm will have 25 per cent more inhabitants by 2030. The City's Vision 2030 describes what it will be like to live in, work in and visit Stockholm. Exactly how the city will grow is described in the City Plan, the Walkable City: the density of existing housing developments is to increase and 100,000 new homes are to be built thus enabling more people to live and work in the same area.

Roads, the metro and rail lines must be extended to support this regional development, however, the demand for transportation within the city's boundaries will, in all probability, be greater than the physical capacity of the transport system. Accordingly, we must consider why we need to travel and, to a greater extent, plan our journeys as well as review how we utilise our roads and streets to transport people and goods more efficiently.

A key element of the Walkable City's strategy is to utilise city planning to reduce the need to travel. In addition, certain types of journeys can be replaced, for example, through individuals choosing to work from home a few days a week where this is possible, shopping over the Internet or through planning their journeys to combine several purposes.

Nevertheless, growth means that the city's streets and rail lines will need to transport an increasing number of people and more goods than they do at present, and, preferably, achieve this without any impairment of journey quality. Therefore, we need to promote the development of those means of transport that are most efficient in terms of usage of space and transportation. Increased city density provides a varied urban environment where several points can be reached on foot or by bicycle, as well as the basis for frequent, high-capacity public transport in all of the city's districts.

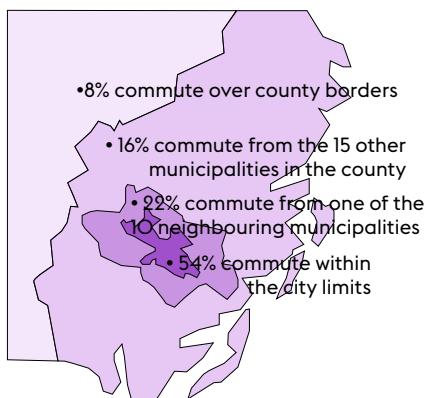
The Urban Mobility Strategy will help to achieve the goals in Vision 2030

This strategy provides the guiding policies for priorities in large and small decisions pertaining to the city's roads and streets to promote a more efficient, safe, attractive, environmentally friendly and healthy Stockholm in line with the vision and the City Plan. It focuses on the goals themselves rather than the path to them. In addition, it comprises a support for planning of the city's internal operations, in the city's collaboration with other government agencies and in dialogue with its residents.

One piece of the puzzle in a greater whole

The strategy applies to all of the City of Stockholm, but only for the city's own roads and streets. This means that the strategy must be viewed as one piece of the puzzle. The city's roads and streets are an integrated component in the regional transport system, which comprises motorways, railways, public transport and waterways that are managed by various government agencies and companies. It is important to understand about which areas the city can influence directly, and where the city is one of a number of organisations that can use their influence to bring about change.

**Approximately
570 000
people work in Stockholm**



Data source:
Statistics Sweden (SCB)/The City of Stockholm's Office of Research and Statistics (USK) 2009

Together, the City of Stockholm, the Swedish Transport Administration, the County Council (in its role as regional public transport agency) and the City of Solna are responsible for the region's primary transport system. The organisation of high quality, reliable transport in these parts of the system covers 80-90 per cent of the challenges facing the region. The Urban Mobility Strategy only applies to one part of this network, but provides clarity regarding the city's intentions for its part of the transport system, which can be used in closer partnership with various operators.

A significant proportion of all journeys in the region occur within the city. Approximately 570,000 people work in Stockholm. Of these individuals, 54 per cent live within the city limits and a further 22 per cent live in one of the ten adjoining municipalities (Järfälla, Sollentuna, Sundbyberg, Solna, Danderyd, Lidingö, Nacka, Tyresö, Huddinge and Ekerö). 16 per cent commute from the county's other 15 municipalities, while only 8 per cent commute from another county (Statistics Sweden/the City of Stockholm's Office of Research and Statistics, 2009). Regional enlargement means it can be easier to commute longer distances but the number who do so will continue to be small compared with those who commute within the city limits or from neighbouring municipalities.

The contents of the strategy

Chapter 2 describes the city's overall strategy for ensuring the function of transport links in a growing major city. It describes the City Plan's four urban development strategies and what they mean for the transport system as well as the priorities that should be utilised to support the development of the city.

Chapter 3 contains the guiding policies for planning Stockholm's roads and streets to ensure that the city is able to realise Vision 2030 and the City Plan, the Walkable City. Four planning aims and 14 goals exist for world-class city streets in Stockholm to become a reality. There is a description of why each goal is important and the probable consequences if the right decision is not made at the right moment.

Chapter 4 describes how the city should work based on the strategy as well as how it should produce action plans and utilise the goals as support when making the necessary decisions about priorities.

Traffic planning and accessibility are key components in the work of many committees and administrations. As part of creating an efficient and effective city, everyone is responsible for ensuring that each development proposal contributes to achieving the goals in the Urban Mobility Strategy and Vision 2030. The city and other operators must work together on several fronts. The street environment must be developed based on this urban mobility strategy in parallel with the City Planning Administration and the Stockholm City Development Administration working to increase city density. The Environment and Health Administration works to make car and heavy vehicle traffic as environmentally friendly as possible.

Planning requires prioritising – and deprioritising

The city's roads and streets must provide space for a variety of functions and interests. People need to travel utilising a variety of means of transport; goods need to be transported; space is needed for shops, meetings and other social functions, as well as for parking, loading and unloading, cleaning, etc. All functions are important and there must be room for all of them in the city.

However the street reserve is insufficient to provide space for all these functions at all locations. For all of the functions to be present, this would require a street that was 45 metres wide. The majority of main thoroughfares in Stockholm are between 20 and 30 metres wide. Accordingly, we have to prioritise. All planning is about managing conflicts, or in other words prioritising.

If the city does not consciously prioritise between various functions, it runs the risk of this leading to poor accessibility, low road safety and ugly, unsafe environments. This strategy is aimed at providing the city's administrations and committees with support in making these difficult prioritisations, thus enabling us to better balance the various needs at an overall level.

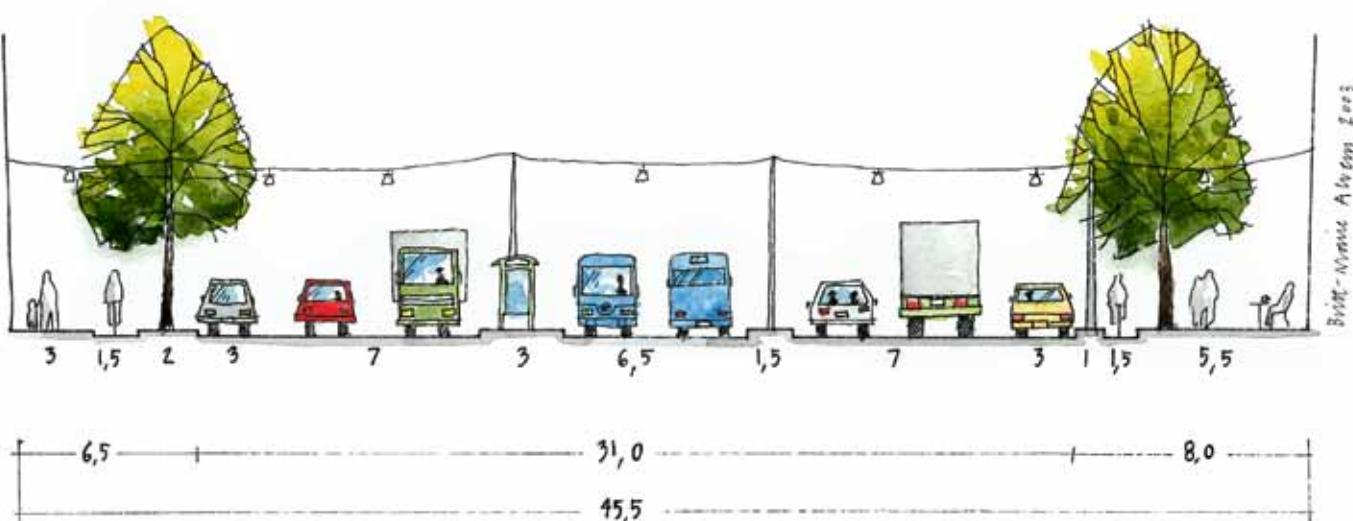
Traffic comprises people and goods – not vehicles

People live in cities so that they have many opportunities just a short journey away – jobs, schools, other people, etc. Travelling is about reaching the destination, not the journey itself. Flows and mobility are not goals in themselves. The key element is accessibility, to easily reach one's destination. In order to achieve efficient and sustainable traffic flows, the city must change focus from moving vehicles to moving people and goods. This includes taking into consideration the entire journey from start to finish, which is generally accomplished through a variety of means of transport.

It is crucial to distinguish between different types of vehicular traffic. A large proportion of the transportation performed with motor vehicles is necessary for the city's function and should therefore be supported. However, in practice, it is not always easy to prioritise these types of transportation or vehicles in the street reserve. In this case, congestion taxes could play an important role in prioritising high-value vehicle traffic over journeys that could utilise another mode of transport, take place at a different time or in another part of the transport system.

45 metres

wide street to accomodate all the functions
The majority of main thoroughfares in Stockholm are between 20 and 30 metres wide



The image shows how wide a main thoroughfare must be to accommodate all of the functions. A typical main thoroughfare in Stockholm is between 20 and 30 metres wide.

A city with cars – not a city for cars

While in many contexts, the car has a crucial function, efficient car travel in a major city requires people to make the majority of journeys by other modes of transport.

For Stockholm's transport system to function efficiently, and for car traffic to function efficiently, the proportion of journeys undertaken by car must be reduced. More people need to choose to walk, cycle and use public transport. To achieve this, the street environment must make the step-by-step transition to more dedicated lanes for public transport, more cycle lanes, fewer parking places and an enhanced street environment for pedestrians. This will not happen overnight, but it is a strategic aim for 2030. If the city steers towards these goals, the traffic situation will become sustainable given time.

25%
increase in the region's population by 2030

The reduction of car traffic is not a barrier for satisfactory and functional car traffic, distribution traffic and other commercial traffic. On the contrary, it is a necessity. An increase in the region's population of up to 25 per cent is planned by 2030, and all these people will not be able to use a car to the same degree that people do today. Accordingly, not working to reduce car traffic would be an anti-car strategy.

Sustainable accessibility

This strategy has its primary focus on promoting efficient use of a shared and limited resource: street space. How we use and plan this resource plays a decisive role in the city's ability to reach its targets for sustainable social, economic and environmental development.

Road traffic can comprise a danger in itself but is also a source of air pollution and noise, which are damaging to people's health. How we choose to transport ourselves also impacts our health. Our access to a variety of travel alternatives impacts our social lives. Transport infrastructure is expensive to build and the multitude of tunnels and bridges in Stockholm require significant resources to operate and maintain.

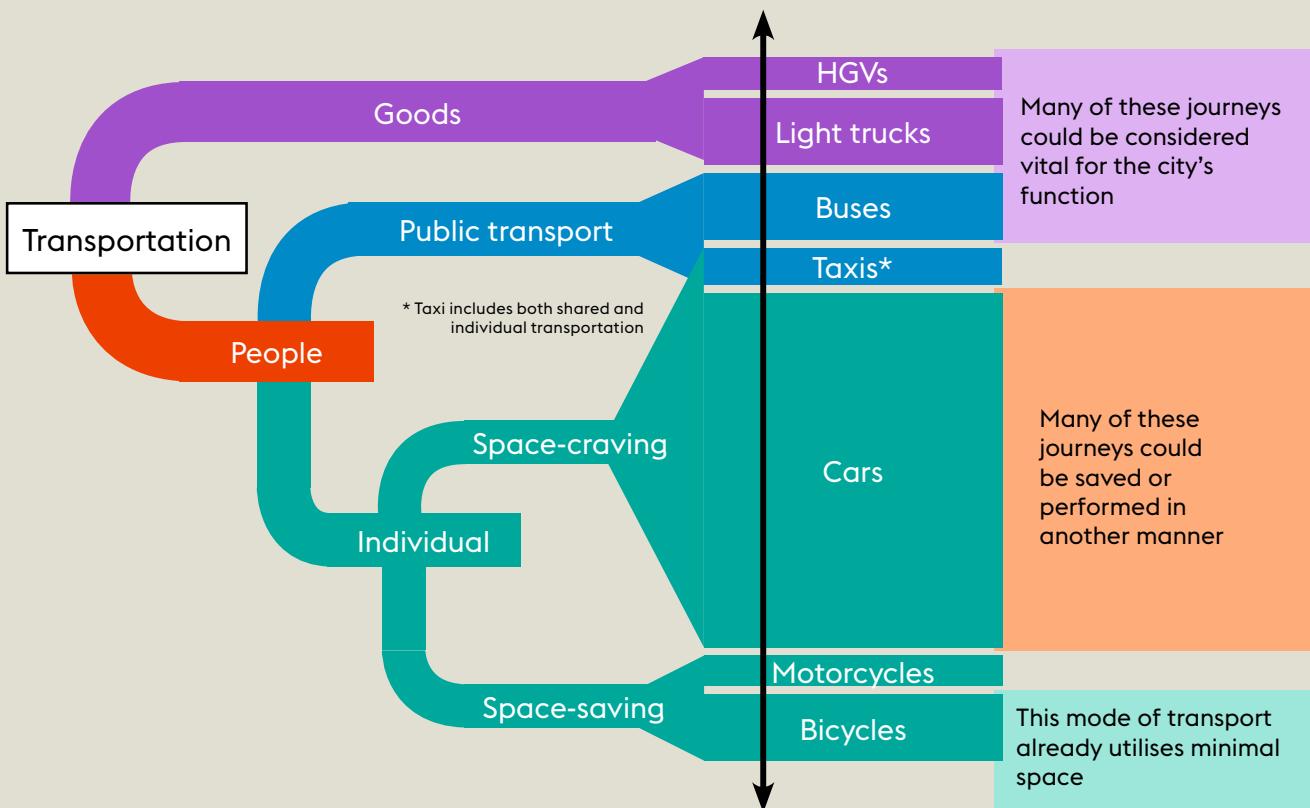
2050
is the goal for when Stockholm will be fossil-fuel free

However, the greatest challenge is the contribution made by traffic to global climate change and the significant efforts that will be required to achieve the ambitious target of a fossil-fuel free city by 2050.

We are all part of the traffic

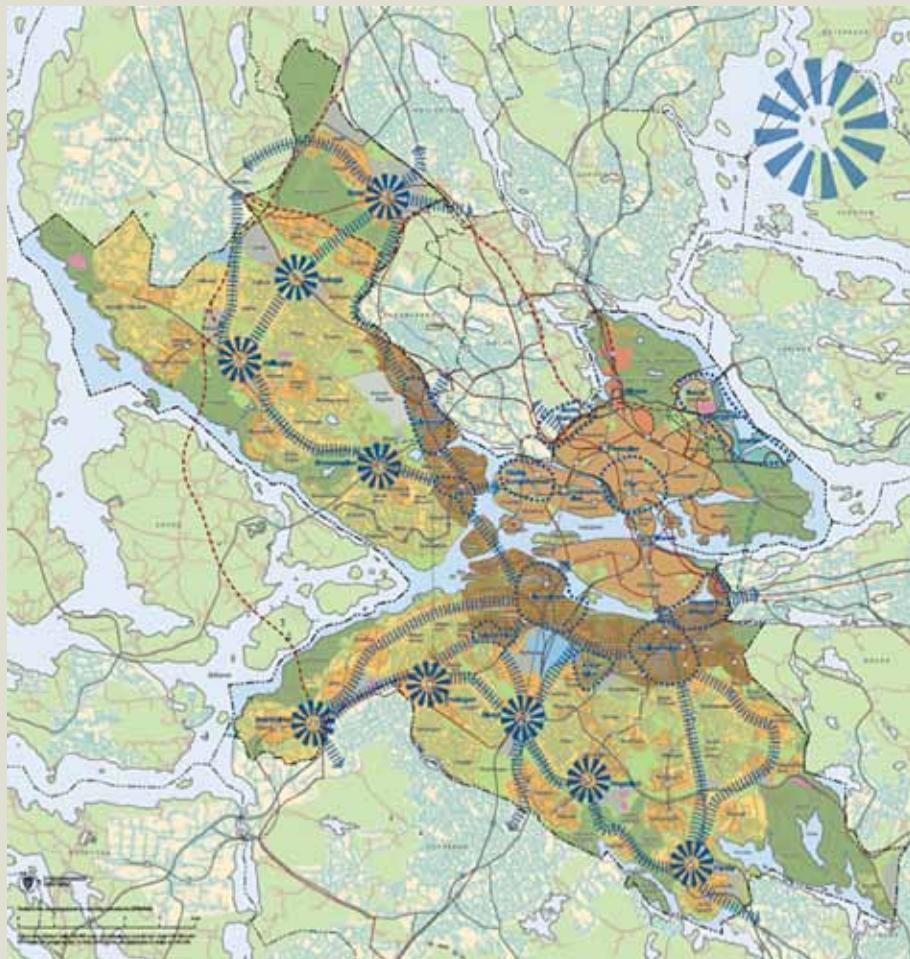
It is not only government agencies that influence traffic. Traffic is also strongly impacted by our behaviour as individual road users. Your travel choice will have consequences, not just for you, but for the whole of society. Your decisions can determine whether a transport system is efficient or inefficient, and if a city is sustainable or unsustainable. You are not stuck in traffic; you are part of the traffic.

This is what this strategy is all about. How individual road users should use the city's streets and roads, the vehicles they travel in and the parking areas where the vehicles are kept, to ensure the system is as efficient as possible.

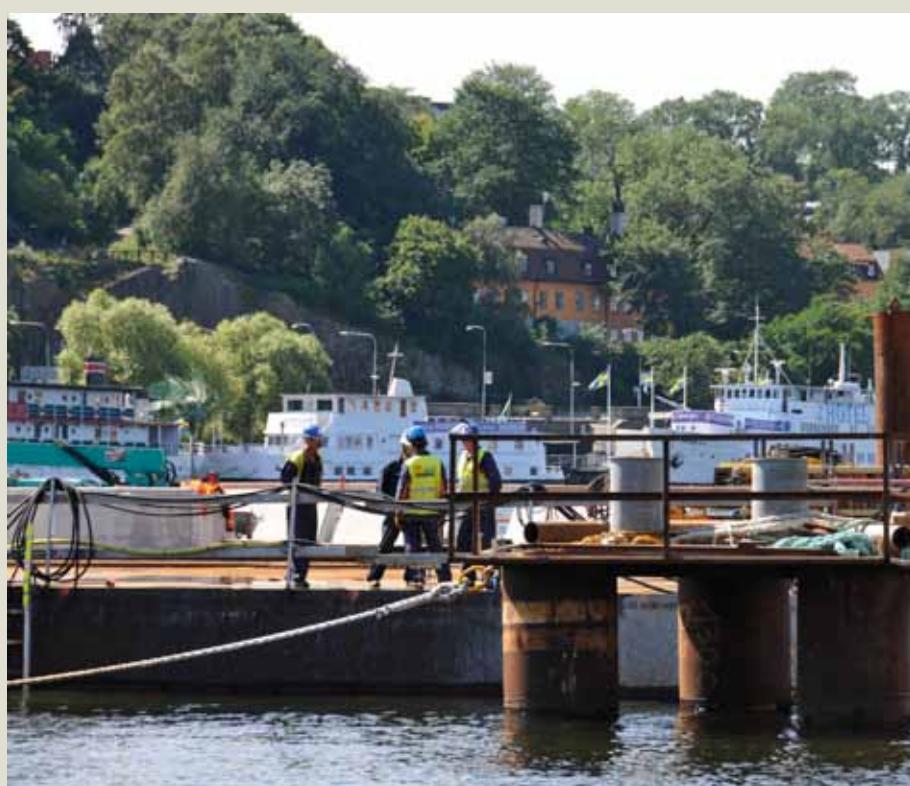


The width of the column indicates the approximate extent of various vehicle movement in the city.





The City Plan



Overall strategy

The city's strategy for how Stockholm will robustly and sustainably manage the increased need for transport following the ongoing population increase is based on three interacting cornerstones: urban planning, infrastructure planning and traffic planning.

Urban planning: a dense and mixed urban development that reduces the need to travel

Stockholm's City Plan, the Walkable City, describes how the city will grow. Existing developments in all parts of the city will become denser. Through the creation of a changing urban environment where a larger and more varied range of workplaces, stores, schools and leisure activities are accessible on foot or by bicycle, a level of accessibility is created that is not built solely on mobility. At the same time, a denser city provides the basis for frequent and high-capacity public transport.

Infrastructure planning: a substantial expansion of public transport and a road network that leads away major traffic flows.

During the expansive phase in Stockholm's development in the 1950s and 1960s, the city was a model example of integrated planning of new city districts and new infrastructure. City districts like Vällingby and Farsta were built with sufficient density for a new metro, which was completed at the same time as the inhabitants and businesses moved in. The development facing Stockholm up to and beyond 2030 requires new vigorous efforts to expand infrastructure.

The Stockholm Agreement is the result of a negotiation between the Swedish government, the City of Stockholm, the county council and the other municipalities in the county that pertains to which new roads and rail lines are to be constructed over the next ten years and how they are to be funded. The agreement covers new roads and rail lines at a total cost of SEK 100 billion for the period to 2021, including:

- An extension of the Light Rail through Ulvsunda, Sundbyberg and Solna to improve cross-city links (opens 2013)
- Norra länken (the Northern Link), a new road tunnel between Norrtull and Ropsten, which will relieve the pressure on parts of the city centre street network (2015)
- A new section of the E18 between Hjulsta and Kista (2015)
- Citybanan, a new tunnel for commuter trains under central Stockholm which will increase capacity and reliability (2017)
- A new branch of the Light Rail to Solna and Kista (about 2018)
- The Stockholm Bypass, a new road link between Skärholmen and Häggvik intended to relieve pressure from the E4 and the Essingeleden motorway that pass through the region (after 2021)
- A number of other rail and road projects in the county, including capacity-enhancing measures.

2021

**Nya vägar och spår till en
totalkostnad av 100
miljarder kronor ingår
i överenskommelsen**



The City Plan also contains important projects, to be prioritised in future action packages, for example:

- An extension of the Metro's blue line from Kungsträdgården to Nacka
- A tram track link to New Karolinska Solna and the city district of Hagastaden
- A public transport link between Flemingsberg, Skärholmen and Älvsjö, as well as an extension to Skarpnäck
- Conversion of Bus Rapid Transit line No. 4 to a tramway
- An easterly link over the Saltsjö-Mälaren water strait.

Traffic planning: optimising use of existing infrastructure

Population growth in the city and the region is of such an extent that even these major investments in new roads and rail lines will be insufficient and significant capacity deficiencies will continue to exist in parts of the transport system even after these expansions. The city and other operators with responsibility for the region's transport system must add capacity to enable more people and more goods to be transported in the same space. This is nothing new in itself, the city is working continuously to optimise use of the limited space, but the pace of change means that there is an increasing need for this work to be coordinated and directed towards shared goals. In parallel, an increased need exists for the provision of more travel alternatives and useable information as well demand management. A dense city also places higher requirements on the functionality of roads and streets as vibrant environments that promote social interaction.

The Stockholm Agreement also includes the target of reducing road traffic emissions in Stockholm County by 30 per cent by 2030, primarily through measures that promote green cars and trucks. In addition, the goals for air quality and noise must be reached through measures including limitations on use of studded tyres, development of the use of green zones and differentiated congestion tax with higher charges for vehicles that have a larger negative impact. The city also has a goal of fossil-fuel free road traffic.

Why can't we just build new roads and rail lines – do we really need to do anything else?

We can choose to do nothing and continue to plan in the same way we have until now. However, this does have consequences.

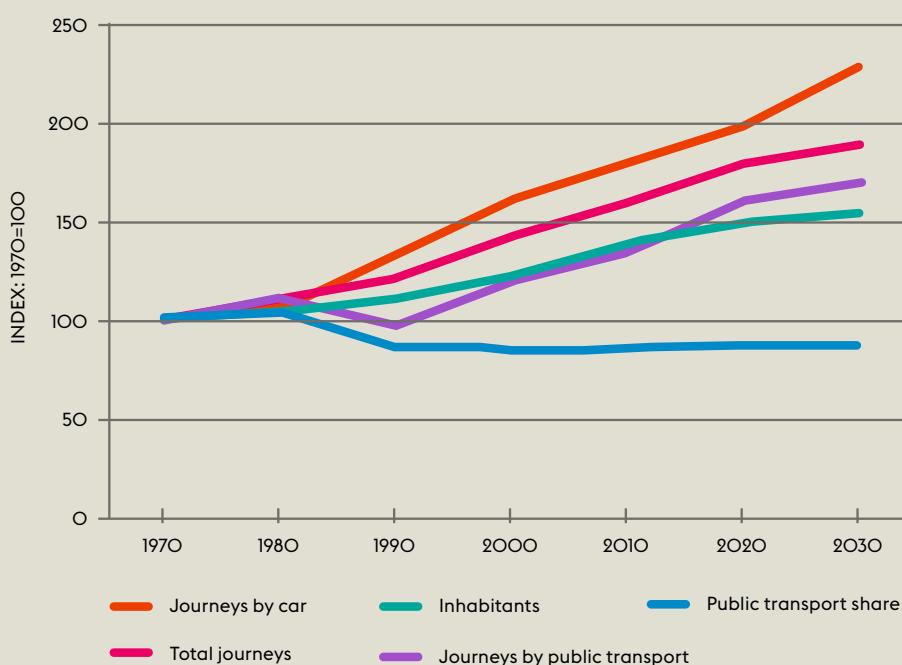
The City of Stockholm Traffic Administration has prepared traffic projections to see what will happen if we build the city as described in the City Plan and, in parallel, build out infrastructure in line with the Stockholm Agreement, but otherwise continue to plan as we have thus far. Preparing projections for the future is not an exact science, it builds on assumptions regarding which trends will continue and which will be broken as well as how they will be broken. Traffic models and the projections that they provide are powerful tools for traffic and urban planning, but they must support and not steer the planning process and decision making. They show the results of a specific chain of actions, but do not preclude the choice of another direction. They show what will happen if nothing else is done or no other trend break occurs.

The projections show that travel within the county will increase as a result of the increase in population and standard of living, and that travel by car is expected to increase slightly faster than travel by public transport unless something else is done or some other trend break occurs. This will lead to the proportional use of public transport remaining constant or even declining

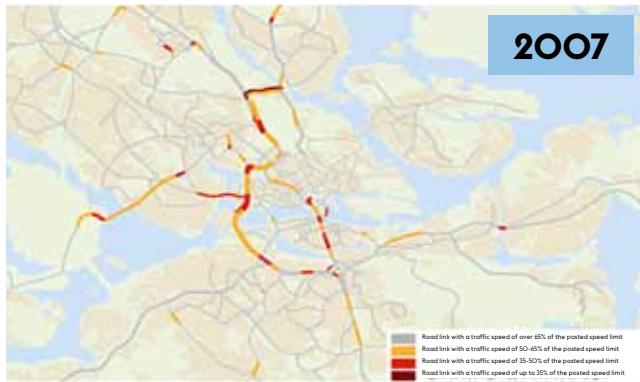
The images show some results of the traffic analyses. The colour scale shows the parts of the road network where traffic moves most slowly in the peak hours of the morning due to congestion. There is nothing out of the ordinary with reduced traffic speeds at peak hours – it would be unrealistic to expect traffic to flow unimpeded in a major city at peak hours. However, traffic that is extremely slow, represented by the red lines, indicates that the speed of traffic flow is becoming an issue for travel-time reliability, which can also increase the environmental impact.

Generally speaking, the Stockholm Bypass and the other major investments allow the region to grow as planned by approximately 25 per cent, but the congestion on the city streets and roads is only marginally affected. Pressure on the Essingeleden motorway will be relieved due to the Stockholm Bypass and due to the congestion taxes implemented when the bypass opens. The Stockholm Bypass will fulfil its purpose of providing a better link between the region's northern and southern parts and will increase regional accessibility, but traffic levels on local streets and roads in the city will remain approximately the same – or worse – than at present, unless something else is done. Meanwhile, the situation is expected to gradually deteriorate leading up to about 2021 when the Stockholm Bypass is planned to open.

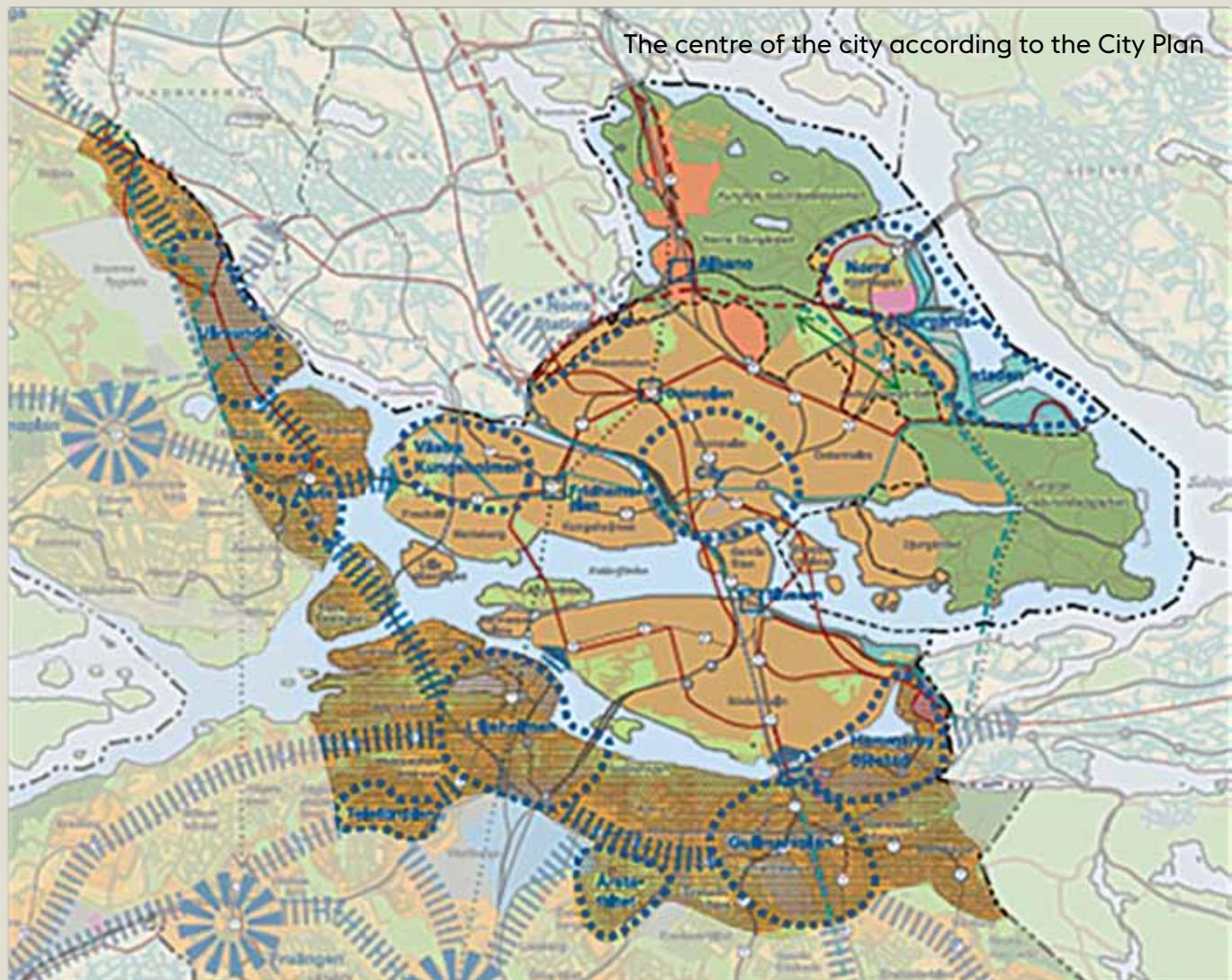
With increasing demand and a stable supply, maintaining current levels of accessibility is an ambitious goal.



Projections for travel and public transport in Stockholm County. The current population increase (2011) is faster than the rate projected.



Speed reductions in the road network during the morning peak hour for a current situation scenario (2007, top), a base scenario for 2020 (centre) and for 2030 with an expanded infrastructure in line with the Stockholm Agreement. The colour scale illustrates traffic speeds compared with posted speed limits.



Traffic is a key element in environmental strategy work

Road traffic is one of the city's largest environmental issues, through air pollution, noise and emissions of greenhouse gases. The city's long-term investment in public transport and, more recently, in congestion tax and bicycle traffic have led to a relatively low level of emissions per inhabitant. However the environmental goals assume a continued rapid trend in the right direction. The planned expansion of public transport will help, but more is needed according to the city's action plans for climate and energy⁸, including

- More lanes for public transport and cycle lanes/cycle paths
- Raised parking charges
- Promotion of car pools
- Increased capacity utilization for goods vehicles
- Marketing of alternatives to car journeys, for example video conferences and teleworking.
- Marketing measures to promote green cars

Strategic priorities

Stockholm has a wide variety of urban environments. No single policy exists for prioritising between methods of transport or the functions of the road and street network, instead, different priorities will apply in different urban environments, at different times and based on different functions.

This chapter describes the overriding policies that apply for various parts of the road network and different sections of the city based on the City Plan's four urban development strategies for sustainable growth.

Continue to strengthen central Stockholm

Continuing to strengthen central Stockholm means developing the city centre and inner city qualities and increased housing and workplace density in those areas adjacent to the current inner city thereby providing them with a more urban character. Major urban development areas have been identified in Hagastaden, Norra Djurgårdsstaden, Hammarby Sjöstad, Söderstaden, Årsta-fältet, Liljeholmen, Telefonplan, Västra Kungsholmen, Alvik and Ulvsunda. In these areas, urban environments have been built and will be built that reflect the city-block structure of the inner city. Roads, tram tracks and rail lines must be built in these areas, but for the continued functionality of regional and local traffic in and around these denser city districts, travel patterns in these areas must reflect those of the inner city. In other words, greater use of public transport, bicycles and walking and less use of cars than in the suburbs.

Invest in attractive nodes

Investing in attractive nodes in the suburbs is the second of the City Plan's four urban development strategies. Eight nodes have been identified: Kista, Spånga, Vällingby, Brommaplan, Skärholmen, Fruängen, Älvsjö, Högdalen and Farsta. Streets and roads in and around these nodes will, to a certain degree, be similar to the inner city in terms of function, but also with regard to the competition for space that arises. The balance between local and regional needs must be managed and it is possible that a partial change in travel patterns is needed in these locations as compared with other parts of the suburbs. Parking is a particular area that could cause conflict unless the right decision is made regarding regulation.

⁸ Stockholm action plan for climate and energy 2010–2020. A new version is being prepared.

Connect city districts

The third urban development strategy is the connection of city districts. Connecting a city together comprises far more than just physical links that enable movement. However, the road network has a key role in physically linking the nodes to each other, the centre of the city and the region as a whole. Today, the car is the fastest alternative for many connections between two points outside of the inner city. The possibility of performing such journeys with public transport (primarily by bus or tramway), on bicycles or on foot must also be enhanced.

Many of the strategic relationships identified in the City Plan coincide with the primary road network, which was defined as part of the framework for enhanced regional accessibility, a collaboration between the city, the Swedish Transport Administration, Stockholm Public Transport (SL) and the City of Solna. The network comprises those links that have a regional function and a substantial flow of traffic measured as the number of city travellers by bus or car. The need for a balance between regional and local functions indicates that other modes of transport than using your own car need to be promoted.

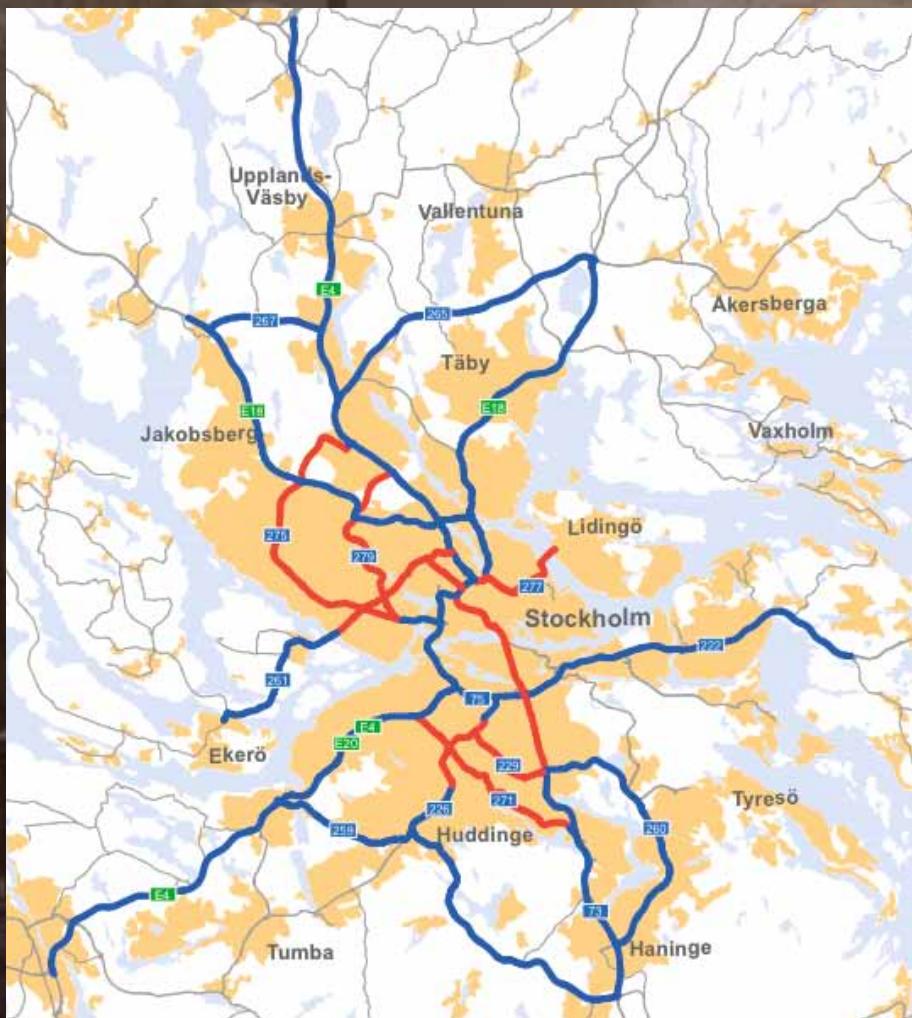
A few principles have been established for this network which impact how the goals in this strategy are applied:

- the needs of moving traffic have priority over parking
- the requirements of large regional traffic flows have priority over small local traffic flows
- predictable and reliable accessibility has priority over higher average travel speeds.

Promote a vibrant urban environment

The street environment plays a decisive role in Stockholm's public spaces and the role of the road and street network as a public space and not just as a transport route must be strengthened. The City Plan is named the Walkable City and the essence of the fourth urban development strategy is that people should be able to move safely around the city on foot or by bicycle. Accessibility for people with disabilities as well as the mobility of children are a particular priority.





The primary road network

The Swedish Transport Administration's roads are shown in blue, the city's and Solna's roads are shown in red – the primary road network in the inner city is not shown in this image.



VISION 2030

A general description of Stockholm in 2030

THE CITY PLAN

A planning aim to achieve the vision

ENVIRONMENTAL GOALS

Goals for the climate and environment
– that are also based on national commitments

THE URBAN MOBILITY STRATEGY

OTHER THEMATIC STRATEGIES AND PLANS

Main network strategy

Road safety

Bicycle plan

Parking

Goods traffic

Pedestrian traffic

Traffic and the environment

Objectives for world-class city streets

The City of Stockholm has published a vision of the type of city Stockholm will be in 2030. The city has also prepared a plan over how the future city will be built. This strategy describes what we need to do with the city's roads and streets to support the plan and the vision. This requires objectives for how streets in this major city will be used in Stockholm 2030.

Vision 2030 describes the Stockholm of the future

In this vision, the transport system contributes to creating a larger job and housing market in the Mälardalen region. Measured worldwide, Stockholm will be the city whose inhabitants use public transport the most and which has an effective and safe network of cycle routes. The city will actively conduct campaigns to change travel patterns towards high-capacity and energy-efficient means of transport. The city will develop and invest in technical traffic solutions in close collaboration with other municipal and regional operators.

Under the vision, Stockholmers' car fleet should be almost completely comprised of green cars and availability of eco fuel should be excellent. In addition, smart transport solutions and modern information technology have increased accessibility and thereby reduced emissions.

High capacity and energy efficient modes

The modes which have the highest capacity, that is to say which have the potential to transport the most people on a small surface area, are often also those which are most energy efficient with least climate and environmental impact. Highest capacity have walking, cycling, public transport.

The Walkable City is the plan for the Stockholm of the future

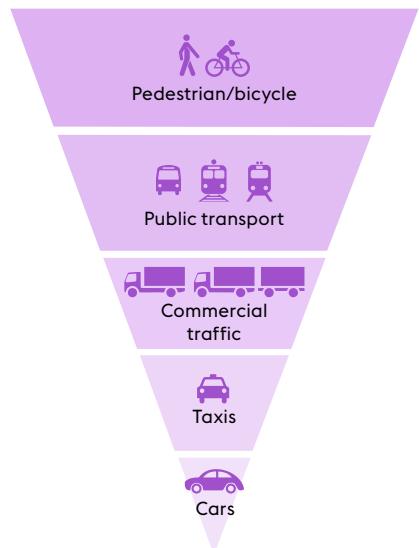
The City Plan introduces the walkable city concept. This is a method of building a city where access – the ability to reach different destinations – does not build solely on mobility but also on accessibility. Dense urban development means an increasing number of more varied destinations within a shorter distance that enables more journeys on foot and by bicycle. At the same time, a denser city provides an enhanced basis for frequent and high-capacity public transport. Increased density also means new challenges for our roads and streets – it should be possible to transport more people using the same space.

The plan defines the direction for a modern transport system and sustainable travel based on Vision 2030. The city will:

- Plan for the efficient implementation of the infrastructure projects included in the Stockholm Agreement.

2030

The vision describes what it will be like to live in, work in and visit Stockholm in the future



- Work to ensure a long-term focus on public transport.
- Focus planning on increased mobility for pedestrians and cyclists.

The Urban Mobility Strategy describes how the road and street network achieves the vision.

The Urban Mobility Strategy is part of the city's work with Vision 2030, through its description of planning aims for the city's roads and streets as part of achieving the vision and the City Plan.

Planning aims for the road and street network

Four planning aims for the road and street network have been prepared as part of the Urban Mobility Strategy. The order in which the aims or the subsequent goals are presented in no way represent any form of ranking. All objectives are equally important on a general level, even if conflicts between objectives in individual projects will require an order of priority based on local conditions.

- A An increasing number of people and amount of goods need to be moved, through greater use of high-capacity transportation means; that is, public transport, bicycles and walking as well as goods vehicles with a high load factor.**
- B Accessibility in the road and street network is to be enhanced by increasing speeds for high-capacity transportation means and raising travel-time reliability for all road users.**
- C The role of roads and streets as attractive areas is to be strengthened through improved walkability in the walkable city.**
- D The negative effects of road and street traffic must be minimised through promoting car use for journeys that generate the most public good.**

In the remainder of this chapter, the meaning of the overriding aims is defined, why they are important, which goals the city will use to meet these aims and how development is to be measured using a number of indicators.

The goals apply to the entire city, unless specified otherwise.

Planning aim A:

An increasing number of people and amount of goods need to be moved, through greater use of high-capacity transportation means; that is, public transport, bicycles and walking as well as goods vehicles with a high load factor.

The Stockholm region is growing. An increasing number of people live in the same space and parts of the city will become denser. To avoid a deterioration in accessibility, the city's roads and streets must enable the movement of more people and more goods without utilising any larger physical spaces in existing development. More people must be transported using the same space. This can be achieved by making it more attractive and easier to use those modes of transport that can convey most people per unit of area, or in other words, public transport, cycling and walking.

Capacity can be defined in various ways

No clear limit exists between a road network with free capacity and one that is full. There are several locations in Stockholm's road and street network that, at certain times, have more vehicles than there is actually space for. Queues arise in these, so-called, bottlenecks. That the demand for transportation exceeds capacity, or in other words, queues form, is part of life in a major city and must be accepted to a certain degree.

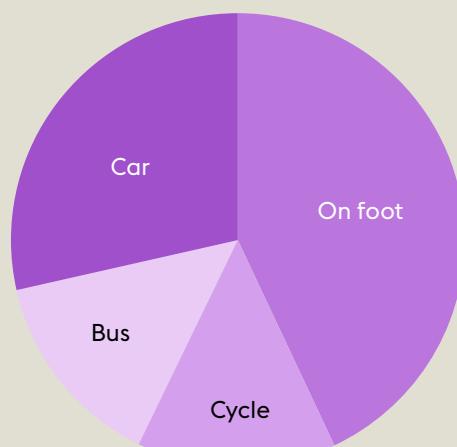
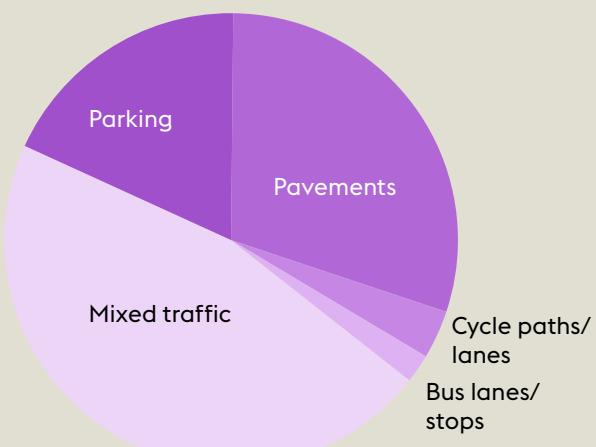
The capacity of a street can be calculated based on its ability to move vehicles and where different types of vehicles are calculated as requiring various amounts of space. If instead, one wishes to calculate a street's ability to transport people (and even goods), then it is important to know how many vehicles can be transported and how many people (or how much goods) can be carried in these vehicles.

15 000 000

ungefärlåt
många kvadrat-
meter gatumark finns det
inom Stockholms stad

The capacity of the city's road and street network and how we use it

The City of Stockholm contains about 15,000,000 square metres of street reserve. Of this area, approximately one-third is used as pavements and squares dedicated to pedestrians and two-thirds as carriageways for vehicular traffic in the form of bicycles, buses, trams, freight traffic and private cars. Certain parts of the carriageway have been reserved for particular purposes: approximately one-fourth for parking spaces, 3-4 per cent for cycle paths or cycle lanes and about 1-2 per cent for bus lanes and bus stops.



The left diagram illustrates how space is currently utilised in Stockholm's roads and streets, while the right diagram illustrates how people are transported via the city's roads and streets. This is an illustration that simplifies an extremely complex picture.

Disappearing traffic

Reallocating road space from general road users to benefit public transport, pedestrians, cyclists or the urban environment is often predicted to lead to major traffic problems on the street in question and in the surrounding street network. But experience gained in Sweden and internationally over the past 20 years shows that such predictions are often unnecessarily pessimistic and that the feared traffic chaos seldom occurs. Under the right conditions and with careful planning, reductions of between 10 and 20 per cent in general traffic levels are achieved by city travellers changing their travel patterns in more ways than initially assumed¹⁾.

Smart choices

Smart choices is a collective term for a variety of different types of measures aimed at increasing the efficiency of a transport system to deal with congestion, reduce environmental impact or enhance cost efficiency by influencing the travel choices of people and companies. Examples of smart-choice measures include travel planning for individuals, schools or workplaces, as well as car pools and information campaigns regarding the various alternatives. Even financial incentives such as parking charges or congestion taxes can be considered a form of smart-choice measure.

1) Cairns, Atkins & Goodwin, Disappearing traffic?

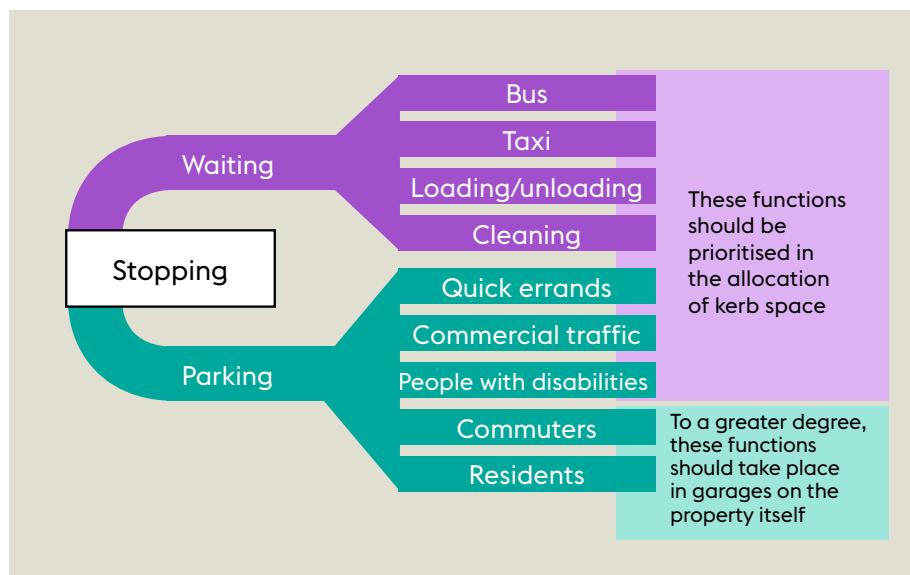
The story so far, in Municipal Engineer, March 2002, pp13-22, Institution of Civil Engineers, London

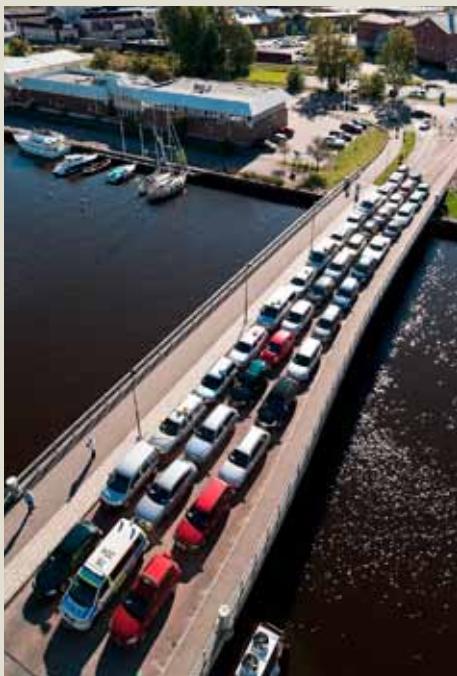
There are various functions associated with waiting and parking and the exact order of priorities in various situations is not static. On a main thoroughfare with public transport and an attractive range of shops and restaurants, a balance is required between accessibility and reachability regarding the kerb, for functions including unloading and loading, taxis and store customers who arrive by car. In a residential street, there is a greater extent of visitors' parking and residents' parking for residents who have no access to other alternatives.

Measures that can increase the capacity of the existing street reserve.

A queue is an allocation mechanism that is used in many situations when demand exceeds supply (for example, in health care, housing supply and for popular shops and restaurants). With the right information it is possible to plan for queues and congestion at both a system and individual level. Queues can be managed by locating queues at strategic locations – by creating bottlenecks – to protect other parts of the road and street network. At an individual level, it can be possible to accept a longer travel time as long as it is reasonably reliable. However, there is a level when this congestion can be damaging for the economy and for the life quality of individuals. There are three methods of mitigating the effects of recurring congestion.

- Marginal increases in the capacity to move vehicles can be achieved in certain cases through optimising traffic lights, moving kerbs, removing left turns or changing parking to traffic lanes. Individually, these so-called trimming measures have a limited or local effect, but when a number of small gains are combined, they can have a greater impact. However, it is important to keep an overall view and not focus on removing an individual bottleneck. This can result in the queue being moved to the next bottleneck where an even longer queue is formed.
- The limited space can be used more efficiently by dedicating more space to those modes of transport that can move most people at the times many people want to travel. In certain cases, this can only be done by reducing the space for those modes of transport that do not use space as efficiently.
- Space can be created in the road network by reducing demand, for example, through smart measures that help city travellers identify other methods of performing the same journey or by not travelling at all. Another example is financial incentives, such as the congestion tax or parking charges that prioritise journeys according to the individual's own valuation of the journey's benefit.





An illustration of the efficiency of various types of traffic. The image shows the space required to move the same amount of people by car (on the left), by bus (centre) and by bicycle (on the right). Photo: Gävle municipality



The restricted streetspace can be used more efficiently by giving more room to those modes which can transport the most people at those times when most people want to travel. In some cases this can only be done by reallocating space from modes which make less efficient use of the streetspace.





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Objective A1

Transport capacity measured in persons per hour during peak hours on the road and street network must increase by more than the corresponding percentage increase in population by 2030.

What results will be achieved by fulfilling the objective?

Increased flows and freedom of choice regarding the transport system provide all Stockholmers with excellent accessibility to all of the city's opportunities. Those who can take the bus or tram, cycle or walk will find a system which provide attractive journeys of high quality. This will relieve pressure from the Metro. Bus and tram passengers, cyclists and pedestrians take less space on the streets and leave space for goods deliveries, commercial transport and those who need to use their car.

How does this fulfil the vision?

Vision 2030 describes how the city and the region are to be able to grow into one cohesive labour market with increased mobility and freedom of choice through increased traffic capacity.

What is required to fulfil the objective?

To attract additional users, public transport, cycling and walking must be attractive, quick and reliable modes of transport. This requires prioritisation at those particular locations and at those times where congestion is most extreme. The CorNetwork plan indicates those thoroughfares where public transport should be allocated a dedicated lane and priority through traffic lights. The Bicycle Plan will do the same for the key regional commuter routes. This means that space will be taken from parking or car traffic. Potential also exists to increase the number of passengers per car.

What will happen if we do not do this?

The car is flexible and has many advantages. But in peak hours in a major city, it has a relatively low ability to move large numbers of people in a limited area. Without attractive alternative modes of transport, an increasing number of people will be forced to choose the car for more journeys. The road and street network's capacity to move people is declining. The currently short but intensive peak hours period will extend to the majority of the day and an increasing proportion of the road and street network as well as tram and rail traffic. Freight traffic could be hit particularly hard.

Who is responsible?

The Traffic and Waste Management Committee makes decisions regarding the allocation of use of the existing street reserve. The Committee works together with the City Development Committee and the City Planning Committee to make decisions regarding new streets and roads in development areas.

What is the situation today?

Existing methods for measuring the capacity of a road and street network are primarily focused on the capacity to move vehicles. The City of Stockholm Traffic Administration is developing a method of measuring capacity in terms of people that can be applied for all modes of transport utilised.



Waterborne public transport

Stockholm is a city built on islands. This forms an important part of what makes the city and the region such an attractive place to live in and to visit. The water is even part of the transport system and is currently underutilised. Vision 2030 describes frequent, environmentally-friendly waterborne transport as a complement to existing public transport. Several of the city's largest development projects are close to water in locations where boat traffic could be part of the transport offering. In addition, potential exists to expand utilisation of our waterways for freight traffic.

This strategy is primarily about how the city should use roads and streets, but also about how waterways should be included with the other components of the transport system into a greater whole. From this perspective, the most important issue is how pedestrians, public transport passengers and cyclists gain access to and from well-designed, available quay locations to change to waterborne public transport. In addition, the possibilities of loading and unloading to and from goods vehicles and boats should be provided for.

The new Public Transport Act

From 2012, a new law applies for public transport, which means that public transport operators are free to establish commercial public transport operations in all geographic parts of the market. Stockholm County Council gains a new role as the regional public transport authority. One of the most important tasks of the authority is to decide on a transport infrastructure program – a strategic document concerning the region's future public transport infrastructure. This defines the type of transport that the public sector intends to take responsibility for.



Objective A2

Public transport's share of motorised transport (that is, journeys by car or public transport, and excluding journeys on foot or by bicycle) during peak hours must be 80 per cent by 2030.

What results will be achieved by fulfilling the objective?

A fine-meshed and cohesive public transport system using tram tracks and rail lines as well as roads and streets that provides attractive, reliable travel times, attracts more users and increases the transportation capacity. The objective is also important to achieve the city's environmental goals.

How does this fulfil the vision?

According to the vision, measured worldwide, Stockholm will be the city whose inhabitants use public transport the most. This goal means that Stockholm can retain a position as one of Europe's major cities with the highest proportion of public transport use.

What is required to fulfil the objective?

Buses and trams have a number of important functions in the public transport system: to link the city districts via cross-city corridors in the inner city and suburbs, to link the parts of the city and region that lack rail traffic to the inner city and other key hubs. The most important bus and tram lines must be given dedicated lanes by taking space from parking or mixed traffic lanes. If the entire bus rapid transit network was given dedicated lanes, this would correspond to 3-4 per cent of the entire road network. In total, more passengers are transported by this network than the commuter trains.

What will happen if we do not do this?

Projections show that even with the planned investments in new rail or tram track links, public transport's share will be maintained or decline without measures to limit the increase in car traffic.

With a lower share for public transport and an increased share for cars, congestion in the road and street network will increase, the peak hours period will become longer and disruptions more extensive.

Who is responsible?

The Traffic and Waste Management Committee is responsible for providing favourable conditions for bus and tram traffic in the city and a Main Network Strategy that was prepared to establish where and how public transport should be prioritised. The City Development Committee and the City Planning Committee are responsible for following the City Plan's guidelines pertaining to development in favourable public transport locations. The city must also collaborate with other municipal street departments in the region, together with the county council as the public transport authority.

What is the situation today

In 2010, public transport accounted for about 70 per cent of motorised journeys with a start and a destination within the city.

Why exclude journeys on foot or by bicycle?

Journeys on foot or by bicycle, account for a major proportion of the total number of journeys, but a relatively small proportion of the total number of kilometres travelled. By excluding journeys on foot or by bicycle from this measurement we can see the allocation for slightly longer journeys more clearly. It is possible that, when we know a little more about travelling by bicycle, that these journeys will be possible to deal with in a similar manner.

Modal shares

The modal share is a measurement of the proportion of all journeys at a specific time and location that are performed with different means of transport. It can be utilised as an indicator of the relative attractiveness, in the form of travel time, cost, comfort, etc. for a specific means of transport. Accordingly, setting objectives for modal shares, such as public transport (Objective A2), bicycle traffic (Objective A3) or pedestrian traffic (Objective C1) is to have the objective of a specific proportion of people considering these high-capacity transportation means so attractive that they elect to use that particular means of transport ahead of any other.

The three objectives specified for shares of the various means of transport in the Urban Mobility Strategy apply in various locations and at different times. The reason for this is to be able to isolate those journeys that the various means of transport are most suitable for. Accordingly, it is not possible to directly compare or summarise the shares.

Objective A2 for public transport applies in peak hours and only for the modal split between public transport and cars, in other words, it excludes journeys by bicycle or on foot.

Objective A3 for bicycles only applies at peak hours, but all means of transport are included here.

Objective C1 for pedestrian traffic applies around the clock, since it is primarily intended to comprise a measure of the traffic environment's attractiveness.

As mentioned earlier, travel will increase substantially by 2030 so an increased modal share means that a journey that would be performed by car today "changes to on foot" or that a journey performed by bus "changes to bicycle." The aim is that people who move to or grow up in Stockholm to a greater extent choose public transport, cycling or walking for more journeys.

Objective A3

The proportion of all journeys at peak hours performed by bicycle must be not less than 15 per cent by 2030.

What results will be achieved by fulfilling the objective?

Direct, safe and reliable bicycle journeys increase the capacity of the road network in parallel with cyclists gaining competitive flexibility, choice and reliability in peak hours.

How does this fulfil the vision?

The vision describes a Stockholm with a well-functioning and safe cycle network. Ambitions are high for Stockholm to become a world-class cycling city.

What is required to fulfil the objective?

The Bicycle Plan illustrates the measures that may be needed. One of the most important factors for increasing bicycle use is reserving space in cycle lanes or cycle paths. On the most important commuting corridors this can motivate the removal or moving of parking spaces and placing limitations on or utilising lanes for motor vehicles.

Where it is not possible to create dedicated space and bicycles are forced to share with other vehicles, safety enhancing measures are needed, for example lower speeds for vehicular traffic. Secure bicycle parking is another prerequisite for increased bicycle use.

What will happen if we do not do this?

Bicycle use is increasing and cycle paths are already congested at certain locations and at specific times. Bicycles have the potential to relieve pressure from other means of transport, but without favourable infrastructure, they will not be able to relieve as much pressure.

Who is responsible?

The Traffic and Waste Management Committee is responsible for creating favourable conditions for bicycle traffic, for operation and maintenance of bicycle infrastructure and even for bicycle parking in the street reserve. The city district committees are responsible for those parts of the bicycle network that are located in parks. The City Planning Committee can secure adequate bicycle parking when granting planning permission. The Urban Environment Council has a role in coordinating initiatives. The city must collaborate with other municipal street departments in the county and with employers to improve the conditions for bicycle commuters.

What is the situation today?

Bicycles are used by about 10 per cent of the city's inhabitants to travel to work or school according to the city's environmental survey. However, more data is needed on bicycle use since deficiencies in existing measurement methods mean the starting point is not precise and, likewise, the definition of what a reasonable goal would be.



Dangerous goods

Dangerous goods is an umbrella term for the transport of substances and products that can harm people, the environment, property or other goods if they are not handled correctly. They include materials that are explosive, inflammable, toxic or corrosive, as well as dangerous objects. Vehicles and the infrastructure for transporting these goods are subject to strict regulatory requirements. The transportation of dangerous goods also affects what may be built by and near railways or roads where dangerous goods are transported. Particularly in tunnels and decked-over areas, dangerous freight issues are important in Stockholm since several major traffic routes run through tunnels or will be decked over.

Objective A4

The percentage of business owners who consider that the city's streets and roads, satisfy their needs will be XX* per cent by 2030.

What results will be achieved by fulfilling the objective?

An efficient business sector is fundamental to a continued high quality of life in Stockholm. An effective road and street network is a basic requisite for an efficient business sector. Freight transportation is benefited by more passenger journeys taking place with space-efficient modes of transport.

How does this fulfil the vision?

The vision describes how favourable conditions will be created for the business sector and how regional accessibility will increase.

What is required to fulfil the objective?

First and foremost, greater collaboration between the city and the business sector is required to enable a better understanding of the business sector's needs, and for the business sector to understand the conditions for traffic in a growing city. A strategy for freight traffic will be developed, on the basis of this collaboration. Freight issues must be addressed at an early stage of all urban planning. Parking spaces may need to be removed to provide space for loading bays.

What will happen if we do not do this?

The business sector's transport needs are complex and the city has very little knowledge of what they are, at this stage. Increased traffic congestion reduces the efficiency of freight traffic, since journey times become longer and less reliable. Problems with deliveries and lack of kerbside access mean that delivery vehicles may be forced to double-park, which affects public accessibility.

Heavy freight traffic accounts for a larger proportion of emissions from road traffic than its proportion of traffic volume and, to a certain extent, constitutes a road safety problem. The city and the industry share the responsibility of finding sustainable solutions for freight traffic.

Who is responsible?

The Traffic and Waste Management Committee is responsible for the function and safety of freight traffic in the street reserve. The City Planning Committee ensures that freight traffic issues are managed effectively in urban planning. The Environment and Health Committee is responsible for collaborating with the freight industry and truck manufacturers to reduce emissions from freight traffic. The city is also one of the freight industry's major customers and is responsible for promoting more efficient freight traffic when procuring services. The freight industry and goods recipients have a responsibility to continue to enhance the efficiency of their activities.

What is the situation today?

There is no index that can satisfy requirements. Better methods for measuring the efficiency of freight traffic may emerge in the future.

* There is no study at present that can provide this information. The City of Stockholm Traffic Administration will produce such a study. Decisions concerning levels for goals will be made in connection with the Administration's operational plan for 2014.

Actions that can increase accessibility

There are four ways to address recurring congestion:

Increase capacity at critical places

One of the reasons why Stockholm's transport system is vulnerable is the geography. There are some places with very few alternative routes in the event of an incident that disrupts traffic. Several infrastructure projects in the Stockholm Agreement, particularly the Stockholm Bypass, are intended to reduce this vulnerability. At the same time, there is a risk that this new capacity will be rapidly filled with induced traffic (see the fact box).

Reduce demand

In practice, it is difficult to build enough capacity in a city to enable margins for managing incidents that impact travel-time reliability. Margins can be created by reducing demand with congestion tax, smart travel-choice measures or other financial incentives.

Mitigate the effect of incidents.

The city collaborates in a range of contexts to mitigate the effect of incidents. One of the most effective measures is information to road users providing opportunities to plan alternative routes to avoid disruptions. For those already affected, there are various types of dynamic traffic control, emergency planning, diversion networks and assistance from the police, fire and rescue services and roadside assistance. This presumes that emergency vehicles' access is also prioritised. Collaboration in the region is constantly developing and improving.

Reduce the number of incidents.

Ideally, incidents should never happen or at least be minimised. The city plans roadworks and other traffic-disrupting events in close collaboration with other county partners, to minimise both the number and the impact of incidents. Another key measure is supervising traffic and parking rules. Road safety measures and lower speeds help to reduce the number of serious traffic accidents. The city will be better at coordinating and prioritising planned roadworks, together with other bodies such as the Swedish Transport Administration and Storstockholms Lokaltrafik AB (SL).

Induced traffic

The Stockholm Agreement (2007) contains a number of major infrastructure projects that provide new opportunities to lead vehicular traffic away from the urban environment, such as Norra länken (the Northern Link), the Stockholm Bypass and an easterly connection over the Saltsjö-Mälaren water strait. New roads provide better accessibility throughout the region. This has a positive effect, but greater accessibility for cars also encourages more people to choose car travel.

Induced demand, where greater supply leads to higher demand, is a well-established economic theory with particular significance for the expansion of traffic infrastructure. In the short term, a new road can induce more traffic since the road offers better service than other alternatives. This is a positive effect, but can also lead to demand that is higher than the road's capacity if the design of the road does not account for the increased traffic. In the long term, more traffic is induced by the road's impact on the localisation of business activities and people's choice of housing, which are also based on the road's structuring effects.

A growing city with a healthy economy acquires the exact amount of traffic in peak hours for which the road capacity has been created. Less vehicular traffic requires other measures, such as congestion tax or other user fees. To ensure continued growth in the region, there must be alternatives.

Planning aim B:

Accessibility in the road and street network is to be enhanced by increasing speeds for high-capacity transportation means and raising travel-time reliability for all road users

Planning aim A describes how the total transport capacity in the road and street network will increase due to more people travelling with public transport, walking or cycling. The city can increase accessibility for many people by permitting higher speeds for these modes of transport. More equal conditions for all modes of transport will make them attractive, and increase freedom of travel choice. Improved accessibility for public transport, walking and cycling will mean that vehicular traffic receives lower priority in certain situations and at certain times. This is unavoidable in a city, but the effect is mitigated by offering reliable journey times. Vulnerability in the road and street network must be addressed.

Accessibility is reliability

There is no standard definition of accessibility in a road and street network. The simplest definition is probably “able to arrive at your destination.” In everyday language, the definition is probably “easy to arrive at your destination within a reasonable time and at a reasonable cost .” This is the definition used for this strategy, but individual variations in perceptions or experiences make it difficult to establish a definition for “reasonable” and, accordingly, “good accessibility.” When travelling, people do not always have the same perception either. An individual’s requirements for access are not the same when they go out to buy food as when they are running late to pick up their children from day-care. Different types of journeys have entirely different requirements. Whose access takes priority, where and when?

The vulnerability of the transport system has the greatest impact on access in major cities. Vulnerability is caused by a temporary drop in capacity, resulting in a gap between supply and demand in the road and street network caused by a brief event, such as a traffic accident, an incorrectly parked vehicle, a major function or planned and unplanned roadworks. This leads to queues, like a recurring bottleneck, but the localization, duration and effect of the queues on the rest of the network are more difficult to predict. Vulnerability has a greater impact on access than traffic capacity, since it cannot be planned for. Business sector transport, in particular, is more dependent on predictability than journey times.

When accessibility is a must – conditions for emergency vehicles

There is one form of access on roads that must never be compromised. Traffic laws state that emergency vehicles must always have priority. Planning must account for this factor at an early stage. The ambulance service, fire and rescue service and police have various conditions to consider, and all three also hold a role in maintaining a safe and robust transport system. Early-stage and continuous consultation is important, as well as a balance between the transport system’s design and rules, the vehicle’s requirements and the driver’s circumstances

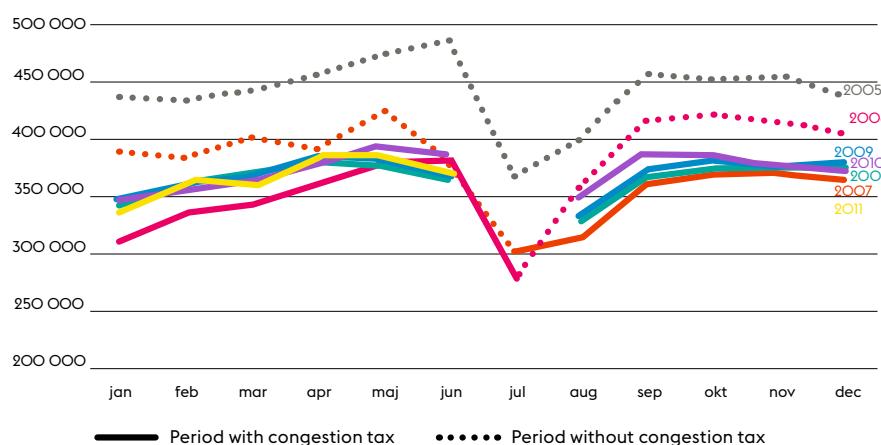
Source: Accessibility for emergency vehicles in urban areas, Swedish Transport Administration, 2011.



The congestion tax makes traffic more reliable

The congestion tax aims to make road traffic more efficient with reduced environmental impact in the periods when demand is highest. In peak-hour traffic, minor disruptions can have a major impact for all road users. Every road user pays for the disruption with their time – the time we lose due to traffic delays. The congestion tax entails that a portion of this cost is paid with money instead. Since money is a more effective price signal than time, certain road users will seek other methods of travel, choose another road or travel at another time. This minimises pressure on the road network and enables a more reliable journey for those who must, or choose to, pay the congestion tax and continue travelling by car.

The congestion tax was introduced permanently in Stockholm in August 2007, following a trial period during the first half of 2006. Average traffic levels declined approximately 18-20 per cent over the congestion tax period compared with the same period in 2005. Average traffic volumes since the introduction of the congestion tax have been more or less stable since that time, despite the rapid population increase throughout the city and county during the same period. The population increase means that new districts and new infrastructure are now under construction in many parts of the region, particularly in and around the inner city. This has led to local traffic disruptions that cause traffic delays. However, these traffic delays do not mean that the congestion tax is not effective. Without the congestion tax, there would be about 20 per cent more cars on the street and traffic delays would have been much more extensive.



The congestion tax is essential in a modern, growing city like Stockholm to increase accessibility, reduce environmental impact and finance infrastructure expansion. The congestion tax is not a static system – to retain its benefits, it must be maintained and reviewed on the basis of prevailing traffic patterns and objectives. The City of Stockholm Traffic Administration is responsible for rigorously monitoring the effects of the congestion tax as a basis for decisions concerning potential adjustments in the future.

Objective B1

The proportion of motor-vehicle journeys with favourable travel-time reliability in peak hours will be XX* per cent by 2030.

What results will be achieved by fulfilling the objective?

If you can rely on arriving on time, regardless of the transport mode, time can be devoted to other purposes and freedom of travel-choice increases. This objective entails that a certain per cent of all road users on the city's road and street network will arrive within a specified and typical travel time.

How does this fulfil the vision

The vision establishes the significance of an effective, high-quality transport system with good accessibility. If travel-time reliability is favourable in a growing city, the accessibility and journey quality for vehicular traffic will also be favourable.

What is required to fulfil the objective?

Better travel-time reliability is primarily achieved by increasing the transport capacity in line with planning aim A. In certain cases, demand must be slowed with measures such as congestion taxes, parking fees or traffic signals as a means of improving travel-time reliability. Capacity limitations in certain sections of the road and street network may also be required to ensure reliable journey times in other sections of the network, such as where a major road enters a section of the road and street network that does not have the same capacity to handle major traffic flows. This could be particularly significant for new construction where new roads and streets will be dimensioned according to the surrounding network's capacity to absorb new traffic.

Measures to reduce the number of incidents will be developed, such as designing safe street environments and introducing speed limits.

What will happen if we do not do this?

Margins in the road and street network during peak hours are already slim. The smallest disruption can have major implications. Unreliable journey times generate costs for road users and in particular for the business sector. Without an active plan for increasing travel-time reliability, there is a risk that the extent and costs for this uncertainty will increase.

Who is responsible?

The Traffic and Waste Management Committee is responsible for designing the traffic environment in a manner that provides conditions for reliable and safe traffic. The city must collaborate with other road authorities in the county, especially the Swedish Transport Administration, and with the police in regard to the supervision of speed limits and managing incidents.

What is the situation today?

There is no such measurement today. The method is under development.

* There is no study at present that can provide this information. The City of Stockholm Traffic Administration will produce such a study. Decisions concerning levels for goals will be made in connection with the Administration's operational plan for 2014.

It may also be relevant to divide the objective into various modes of transport, such as public transport, freight traffic and car traffic.

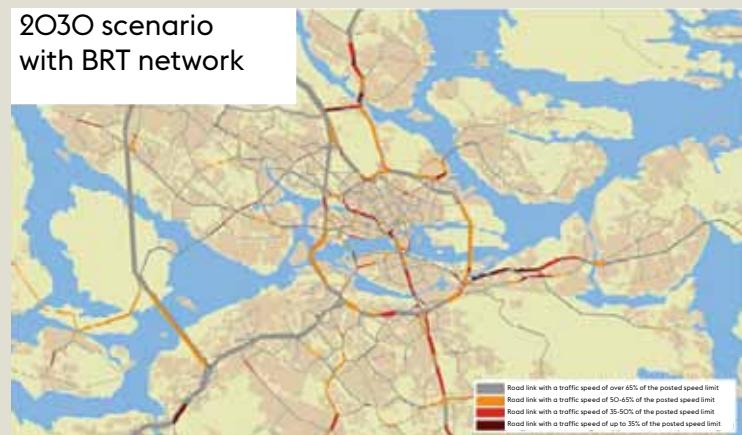


Bus rapid transit (BRT) in and around Stockholm City – Source: Traffic plan 2020, Storstockholms lokaltrafik (SL)

Lower speeds in the road network during morning peak hours for a base scenario 2030 (above) and with an expanded rapid transit network in the inner city (below).



2030 scenario with BRT network



Rapid transit network

The rapid transit network is the backbone of SL's transport network. It comprises a coarsely meshed network of tram, rail and bus rapid transit lines throughout the entire county with radial and cross-sector routes. The rapid transit network connects the county's municipalities with Stockholm City. In the inner city, the rapid transit network connects the various districts with each other and with key centres.

Rapid transit plans are based on the following three main principles:

- good regional accessibility
 - attractive and competitive public transport
 - integrated with plans for an attractive urban environment.

Speed is one of the most significant factors for public transport's capacity to attract road users from other modes of transport. The figure shows the difference when travelling with the rapid transit network (in this example, an extended BRT line 4) at different average speeds. Low-speed sensitivity is greatest in the central section, which means that this is where good accessibility provides the greatest benefits and where the Metro's capacity to reduce flow pressure becomes most significant. The competition for space in the street reserve is also highest in these sections and it is also here that a high average speed is most difficult to achieve.

Reaching an average speed of 20 kph requires dedicated space and right-of-way with signal priority in intersections with pedestrian, bicycle and vehicular traffic. In addition, a distance of at least 500 metres between stops and short boarding times are also required. At the same time, higher priority for rapid transit systems means that other modes of transport must be given lower priority. It must be possible to motivate the cost for other road users with the benefits generated for rapid transit passengers and the urban environment. If dedicated lanes were provided for the entire BRT and tram network in Stockholm City, this would correspond to approximately 3-4 per cent of the entire road network.

A very preliminary assessment is that space could be dedicated to the rapid transit network in the inner city without any major impact on speeds in the regional road network, but with a higher capacity for movement in the local street network. Prioritisation for rapid transit systems at local level entails lower priority for other functions, and could lead to lower speeds for other modes of transport in the local street network.

Objective B2

Rapid transit traffic in the inner city* will have an average speed (including stops) of 20 km per hour by 2030.

What results will be achieved by fulfilling the objective?

Those who choose to travel by public transport on the city's roads and streets will acquire attractive and reliable journey times. This will make public transport more attractive, increase freedom of choice and reserve the roads for essential car journeys and commercial traffic.

How does this fulfil the vision?

Measured worldwide, Stockholm will be the city whose inhabitants use public transport the most. With an increasing number of people using public transport on the city's streets, it is necessary to prioritise and improve their access if this vision is to be achieved..

What is required to fulfil the objective?

The strategy for how buses and trams that belong to the rapid transit network in the city will be permitted to drive at higher speeds will be produced in a rapid transit network strategy. Dedicated lanes and signal priority are a prerequisite. This involves taking space away from vehicular traffic and parked cars, and that the rapid transit network is prioritised by traffic signals, which reduces accessibility for other road users in certain places. This also requires an optimal distance between stops and good opportunities for fast boarding and alighting.

What will happen if we do not do this?

If public transport cannot offer attractive journey times, more people will choose to travel by car. More cars in the same amount of space will lead to increased congestion and less reliable journey times.

Who is responsible?

The Traffic and Waste Management Committee is responsible for designing the traffic environment in a manner that supports fast and reliable rapid transit traffic. The City Development Committee and the City Planning Committee share the responsibility for this also functioning in new street environments. The Stockholm County Council in its role of public transport authority also carries a major share of the responsibility for bus and tram traffic meeting the target speed.

What is the situation today?

In 2010, the average speed for rapid transit buses in the inner city, including stops, was 14 kph.

* Work to produce a strategy for rapid transit traffic in the suburbs and other parts of the county commenced in autumn 2011.

Suburban rapid transit buses account for the cross-city connections between suburban hubs, and for buses to and from those parts of the regions that do not at present have any high-capacity public transport.

New objectives will be developed in the strategy for the performance of these buses (and possibly trams).

Parking in metropolitan areas

Parking is an integral part of the transport system. Like other parts of the system, it has both a unique value that motivates a unique objective, and the potential to contribute to fulfilment of other goals. Pricing and other parking regulations, combined with the congestion tax, are among the most effective instruments for managing traffic and the only instruments that the city controls.

The proportion of traffic in a typical city centre that circles in search of a parking space on the street is estimated at between 10 and 30 per cent, and the average search time is approximately three minutes². If 10,000 vehicles are searching for a parking space on inner city streets every day, and they all require three minutes to find a space, 500 hours per calendar day are spent looking for a parking space. In addition to costs for the individual, this leads to more congestion and emissions.

In an effort to address this and other problems, several cities in North America, including New York, Seattle and Los Angeles, have begun experimenting with market pricing for parking spaces on the street. One of the most advanced projects, SF Park in San Francisco, collects real-time information about parking availability on the street and in parking garages and incrementally raises or lowers the price based on demand. On streets and at times where street parking is unavailable, the price is raised until places become available. On streets with high availability, the price may be lowered. Information about parking availability is distributed to drivers via the Internet, mobile phones and street signs. The purpose is to make it easier to find a parking space, and to reduce circling and double-parking³. The trial in New York has increased access to parking spaces on the street, reduced double parking and improved the traffic flow. Support from delivery companies is also overwhelmingly positive⁴.

In Antwerp in Belgium, the municipal parking company has extended its role by also acting as a parking broker. The company collaborates with property owners that have parking garages with parking availability and tries to match the spaces with drivers who need them. For example, a parking garage in an office property that is empty at night can be leased to residents at an attractive price⁵.

Instruments such as parking quotas when constructing new housing, workplaces and other buildings is used in many cities to reduce trip generation and avoid congestion. In Berlin and Zürich, parking quotas have been adapted or completely removed.



Objective B3

Finding a parking space must be easy. Demand for parking spaces should not exceed 85 per cent of those available by 2030.

What results will be achieved by fulfilling the objective?

Parking space availability is critical to capturing one of the primary strengths of cars as a means of transport: being able to arrive at your destination. If parking spaces are always available when and where they are most needed, accessibility – being able to arrive at your destination – increases for people who need to park their cars. Traffic is also reduced when searching for parking spaces is minimised.

How does this fulfil the vision?

Parking is an integral part of accessibility for people who travel by car, bicycle, motorbike or moped.

What is required to fulfil the objective?

There is no acute lack of parking spaces in Stockholm. A car spends an average of more than 95 per cent of its time parked and all of the city's cars find somewhere to go. To ensure parking space availability, a more market-adjusted pricing is required where and when demand is greatest.

This objective cannot be achieved by creating more parking spaces on the street. More parking underground or in buildings will be required to cater for the increased number of cars due to Stockholm's growing population.

What will happen if we do not do this?

Underground parking is an expensive investment, up to SEK 600,000 per space. Motivating such an investment is difficult if street parking is cheaper, and in most cases free. There are unoccupied parking spaces in garages in Stockholm today, including areas where the demand for parking spaces on streets is intense.

When it is difficult to find a parking space, drivers are more inclined to park incorrectly. The pressure to create more parking spaces on the street increases and street capacity is declining at the same time as demand is rising. Cleaning streets and clearing snow will become more difficult.

Who is responsible?

The Traffic and Waste Management Committee is responsible for regulating street parking. Together with private parking and property companies, Stockholm Parking owns the largest amount of public parking spaces in the city.

What is the situation today?

In October 2011, demand for parking spaces in the inner city amounted to 90.9 per cent of those available.

². Shoup D. 2005: The High Cost of Free Parking. Chicago IL: Planners Press

³. www.SFpark.org

⁴. Presentation by Dalila Hall, City of New York, Department of Transportation

⁵. www.parkereninantwerpen.be



Objective B4

The proportion of road users on the city's roads and streets who are satisfied with their journey quality will be XX* per cent by 2030.

What results will be achieved by fulfilling the objective?

There are many aspects of travel that cannot be measured using objective data. They concern how individual city travellers perceive the quality of their journeys. In a city with congestion and traffic delays, where disruptions will impact travel-time reliability, this requires, in particular, a greater understanding of what can be expected in terms of city traffic, and satisfaction with the information provided by the city and other operators when disruptions occur.

How does this fulfil the vision?

The principle of Vision 2030 is that accessibility will increase. This presumes implementation of the initiatives described in this strategy, but also a greater understanding among the people of Stockholm for what good accessibility in a rapidly growing city actually entails.

What is required to fulfil the objective?

In addition to achieving the other objectives in this strategy, broader publicity campaigns are required to explain what the strategy entails, and what individual city travellers or businesses can expect in a rapidly growing city. An understanding of the need for individual behaviour changes, and how everyone is responsible for ensuring that the transport system can continue to offer high-quality journeys, is required.

It also requires continued development of the regional collaboration around information to people both before travelling and during disruptions, enabling individuals to make the right decisions at the right time.

What will happen if we do not do this?

The people of Stockholm have very high expectations of how their transport system should work. This is positive, but understanding what is reasonable to expect is also important. Traffic problems can never be solved. Having unrealistic expectations means never being satisfied and that attempts to solve the problem will become increasingly expensive and run the risk of creating even higher expectations.

Who is responsible?

The Traffic and Waste Management Committee is primarily responsible for promoting realistic expectations among Stockholm's city travellers and, in collaboration with the Swedish Transport Administration, SL and other public transport operators, providing adequate information about current or planned disruptions.

What is the situation today?

There is no comprehensive measurement of satisfaction among city travellers at present, and development of a new method is needed.

* There is no study at present that can provide this information. The City of Stockholm Traffic Administration will produce such a study. Decisions concerning levels for goals will be made in connection with the Administration's operational plan for 2014.



SUPERDRY
CARDINALS

AMEND CITY

Planning aim C

The role of roads and streets as attractive areas is to be strengthened through improved walkability in the walkable city.

The city's roads and streets are more than a machine for transporting people and goods. They are a vital part of the public realm and play a key role in how Stockholm is perceived as a place to live in, work and visit. The streets should encourage interaction and provide a public meeting place. Traffic planning over the past 50 years has primarily addressed the road and street network on the basis of how vehicular traffic functions, not how the spaces function. This has led to ugly urban environments and poor accessibility for pedestrians, in particular.

The walkable city describes how the city can be constructed and concentrated to enable more journeys by foot, public transport and bicycle. But the plan also demands a functioning and connected transport system for pedestrians. Such a transport system can be described as walking-friendly.

The "walking-friendly" or "journeys on foot" concept also extends to those who require various aids for mobility, such as wheel chairs, rolators or prams. A walking-friendly city enables accessibility and mobility for everyone. It also includes children's right to mobility.

A walking-friendly transport system prioritises pedestrians

A walkable city is a city that prioritises pedestrians. A walkable city is safe, connected and attractive. Everyday life is possible without a car and physical activity is a natural part of everyday life. Distance is the most significant factor for whether people choose to walk or not. The weather, physical disabilities, safety or perceived security are less important. However, closeness is more than "distance" in terms of a walking route and time. The ability to orientate oneself also has a major influence on people's willingness to walk. The urban environment must be easy to navigate, walking routes must be direct, and destinations and nodes linked with easily viewed urban spaces.

Movement on foot is always included in some part of the transport chain. A pedestrian is not only a road user, but also a social player that brings life to the city and the public realm. It is easy to take a pedestrian for granted, since all people have always travelled by foot. Walking is not only a sustainable form of transport that reduces congestion, it also has social and recreational values. Studies show that people who live in walking-friendly city districts have higher social equity. They probably know their neighbours, are politically engaged, are socially responsible and have a high level of trust in their fellow citizens. There are also a well-documented connection between the modes of transport that people choose and their health.

Walking activities can be divided into necessary, optional and social

Physical planning must enable all types of walking, from walking to the bus stop or to work, to walking the dog. A serious approach to pedestrian traffic also involves acknowledgement of pedestrian traffic as a separate mode of transport. Planning that combines pedestrian and bicycle traffic has no possibility of identifying or accounting for the unique terms and conditions for each of these modes of transport.

Objective C1

The proportion of local journeys (or journeys that both start and end in the inner city, southern or western suburbs) made on foot during a calendar day will be at least 60 per cent in the inner city and 50 per cent in the suburbs by 2030.

What results will be achieved by fulfilling the objective?

Stockholm is growing denser, and new and varied environments with a wide range of services are emerging in all parts of the city. Shorter journeys on foot in the city will satisfy the needs of more people, thus increasing freedom of choice. An attractive and pleasant street environment will promote walking as a mode of transport. Pedestrian traffic combined with public transport is an extremely high-capacity and efficient method of using the street reserve.

How does this fulfil the vision?

Pedestrian traffic is fundamental for a city that is connected, and accessible to everyone.

What is required to fulfil the objective?

In certain cases, more space for pedestrians on streets with heavy pedestrian traffic – at the expense of other city travellers – can be motivated. High pedestrian flows may also need priority at signalled crossings, giving lower priority to other road users. Reduced vehicle speeds can also improve road safety, accessibility and comfort for pedestrians.

What will happen if we do not do this?

If fewer people choose walking for short journeys instead of vehicles or public transport, the congestion caused by these modes of transport will increase. Pedestrians will also feel less secure. Local businesses will not benefit from street environments that discourage pedestrians or social interaction.

Who is responsible?

The Traffic and Waste Management Committee is responsible for street environments becoming more walking-friendly, and the city district committees are responsible for key sections of the footpath network in parks. The City Planning Committee and City Development Committee will ensure that the construction of new urban environments are based on the City Plan's description of the walkable city.

What is the situation today?

The proportion of local journeys by foot today is approximately 50 per cent in the inner city and approximately 30 per cent in the suburbs.

Objective C2

The proportion of people who consider the city's streets attractive will be at least XX per cent by 2030

What results will be achieved by fulfilling the objective?

Roads and streets are living spaces, meeting places and shop windows for the people of Stockholm. They will reflect Stockholm's position as one of the world's most attractive cities.

How does this fulfil the vision?

The vision describes the significance of a socially connected city and how this can be promoted by careful planning of the physical urban environment. There will be public spaces in every district where people from a diversity of social groups can meet informally and spontaneously.

What is required to fulfil the objective?

City administrations must have greater awareness of the functions of locations – the role of the street as a social space, not just a place for transport. The factors that determine whether a certain space is functional or dysfunctional are complex, but design, noise and traffic disruptions are significant in this context.

What will happen if we do not do this?

If roads and streets do not prioritise functional locations, they may become ugly, insecure environments that no one wants to visit. Stockholm's image as an attractive city will be weakened and shopping facilities outside the city will be more attractive than shopping in the inner city.

Who is responsible?

The Traffic and Waste Management Committee is responsible for prioritising the function of locations in street environments. The people of Stockholm are all responsible for taking care of their shared street environments.

What is the situation today?

In a survey conducted in the inner city during the congestion tax trial period in 2006, 80 per cent of the respondents claimed that "the inner city was a pleasant place." The method was not totally satisfactory and the survey should be developed to comprise the entire city.

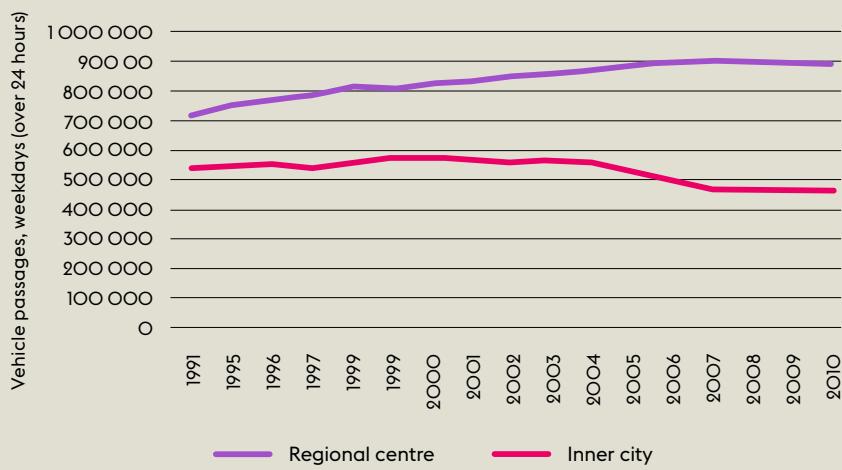
* There is no study at present that can provide this information. The City of Stockholm Traffic Administration will produce such a study. Decisions concerning levels for goals will be made in connection with the Administration's operational plan for 2014.

Stockholm's traffic development

Vehicular traffic to and from the inner city was stable until the congestion tax was introduced in 2006. The inner-city street network was “full” and allowing more vehicles to enter would have seriously compromised accessibility. The congestion tax has created scope for maintaining travel-time reliability and benefitting the urban environment.

Traffic across the region’s central zone (a rough boundary around Stockholm City, Solna City and Sundbyberg Municipality) has stabilised since the congestion tax was introduced in 2006 despite a continued population increase in this area. This could be due to lower growth outside the region than inside the region. But it could also indicate another trend reversal, which questions our assumptions when we produce forecasts. Ever since the car was invented, traffic in cities has grown in pace with the rising population and economic prosperity, but signs of a trend reversal are now emerging. The link between traffic volumes (or the total number of vehicle kilometres travelled (VKT) in a certain road network) and growth is no longer so significant (see also “Peak Car use: understanding the demise of automobile dependence,” Newman and Kenworthy, Journal of World Transport Policy and Practice, 2011).

Traffic development in the regional centre and inner city zones 1991-2010



Severance effects

Researchers had already observed in the 1960s how people living on roads with high levels of traffic have less social contact with their neighbours, especially those on the other side of the road, than those who live on quiet streets⁷. Major roads form physical barriers and there are several examples, particularly in the suburbs, where a road actually severs two districts. Air pollution, noise and insecurity also mean that the traffic becomes a barrier that people find, or perceive as, difficult to cross.

⁷Appleyard, D., Lynch, K. & Myer, J.R., 1964.
The View from the Road, Cambridge, MA:
MIT Press for the Joint Center for Urban
Studies of M.I.T. and Harvard University.



Planning aim D:

The negative effects of road and street traffic must be minimised by encouraging the use of vehicles for journeys where cars can create the most public benefit

One of the greatest challenges for a growing city is increasing accessibility while minimising the vehicular traffic's environmental impact. Continued progress with environmental technology in the transport sector is highly significant for opportunities to achieve the City of Stockholm's climate targets. This progress is mainly driven at national and international levels, but the city also has its own strategies for promoting a higher proportion of green cars. The aim is that all vehicular traffic in Stockholm will be fossil-fuel free by 2050.

Increased road traffic also leads to other undesirable effects such as noise, particles, barriers and safety problems. Planning must create an urban environment that supports expanded public transport services, promotes walking and cycling and provides conditions for, and leads to, less reliance on cars. Reduced vehicular traffic contributes to the prioritisation of high-capacity modes of transport without compromising accessibility for commercial transport and those who choose to travel by car.

The negative effects of road traffic must be minimised

Road traffic emissions (exhaust fumes and particles) represent a major portion of the total pollution in a city. Different polluting or emitted substances have different effects. At some times, the levels of various substances in the environments people visit may be most significant, while the total amount of emissions may be significant at other times. Exposure to particles and air pollutants affects people's health and mortality. It is difficult for Stockholm to achieve the EU's Air Quality Standards for nitrogen dioxide and particles (PM 10). Achievement of these standards requires measures that will reduce road traffic, combined with lower engine emissions and less use of studded tyres.

Noise is one of the greatest environmental problems in a city. The dominant source of noise is traffic and noise is generated by vehicles, tyres and roadways. Vehicle speeds, vehicle volumes and weather conditions also affect noise levels. Living in a noisy environment can have several adverse effects on health, of which sleep disorders are among the most serious.

According to police reports, about 2,000 people are injured on the city's streets and roads every year. Many accidents are never reported and the number of people injured could actually be 5,000-6,000 per year⁸. Pedestrians and cyclists are vulnerable road-user groups as well as children, the elderly and people with disabilities.

The single, most significant, measure for improving road safety in Stockholm is to reduce speeding. This is also significant from an environmental perspective. Streets must be designed to help road users obey speed limits and, in all other respects, drive safely.

⁸.De skadade i Stockholms stad: Hur många är de i verkligheten? Stockholm Traffic Administration, 2008. (Casualties in the City of Stockholm: How many really occur?)

Measures to minimise negative effects

The city has various strategies that minimise impact from traffic. However, these strategies sometimes conflict, and achieving one objective may compromise other objectives. A joint objective with positive effects in all of these areas is to limit the total traffic volume in the areas that are most sensitive. The congestion tax shows the potential for achieving lower levels of air pollution and other effects by reducing traffic.

One condition for an attractive environment is that it is, and people perceive it to be, safe and secure. The main purpose of road safety measures is to create an environment where fewer people are killed and injured. If the measures are carried out correctly, they may also have a range of positive effects on the urban environment and the public realm.

Measures to reduce speed also generate other benefits, such as a lower noise level. The quality of air may also improve due to reduced fuel consumption and subsequently, lower carbon emissions. A higher level of road safety on the city's street network will enable greater mobility for more groups of people and, over time, lead to a healthier population.

Car clubs – car access without ownership

A car is the most practical mode of transport for some journeys. But more and more city dwellers find that these trips are relatively few, and that the cost and inconvenience of owning and maintaining a car for these few occasions is difficult to justify. A car club could be a good alternative for these people – when you need a car, borrow one from the car pool and hand it back to the other car pool members when you don't need it. Large car clubs can also offer a range of vehicle types. Vehicle manufacturers have begun to pick up on this trend, and are in the process of developing a total mobility solution involving cars, trucks, bicycles and motorbikes.

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Dam
Klaring



MÖLNBOTVÄTTEN AB



Objective D1

Through-traffic will not exceed 5 per cent of all traffic in the inner-city street network by 2030.

What results will be achieved by fulfilling the objective?

The Stockholm Bypass will divert regional traffic that does not need to pass through central Stockholm, and enable the Essingeleden motorway to play a more local pressure-relieving role. Through-traffic will no longer pass through inner-city streets, leaving space for a higher degree of local travel by public transport,

How does this fulfil the vision?

This is central to several objectives in Vision 2030 and the City Plan. The major investments in ring roads creates scope for a sustainable increase in travel and an attractive urban environment.

What is required to fulfil the objective?

The congestion tax has helped to reduce through-traffic, but a great deal remains. New ring roads will offer attractive alternatives, but additional measures are required to divert through-traffic. Södra länken (the Southern Link) has relieved pressure on roads in the southern districts adjacent to the inner city due to targeted and pro-active planning. The road network was replanned and the space was re-allocated. Achieving and retaining the relief provided by the Stockholm Bypass and other new roads requires pro-active planning to redistribute capacity in the road and street network – in other words, to take capacity away from vehicular traffic and give it to travel by public transport, foot and bicycle and urban environment purposes. This could also involve an optimisation of financial incentives such as congestion tax and parking fees.

What will happen if we do not do this?

Forecasts shows that, in principle, equally as much traffic will pass through inner-city streets and roads in 2030 as it does today, without active plans to divert traffic to the most appropriate roads and the new infrastructure.

Who is responsible?

The Traffic and Waste Management Committee is responsible for adapting the road and street network to new opportunities created by the Stockholm Bypass and an easterly connection. The city must collaborate with other road authorities in the region to achieve a healthy balance in the region's road network.

What is the situation today?

Figures from the congestion tax system show that 27 per cent of the vehicles that drive into the inner city between 6.30 a.m. and 6.30 p.m. travel out again within a period of 30 minutes.

Objective D2

The total distance driven by car or truck on city's roads and streets in peak hours will not exceed 2008 levels by 2030.

What results will be achieved by fulfilling the objective?

Traffic in the future will function better than today. Major investments in the regional infrastructure are aimed at keeping pace with the growing population, but opportunities to create more space for vehicular traffic in the inner city are limited. If traffic is to function as well or better than today, vehicular traffic in peak hours must not increase, while capacity expansions in other modes of transport will enable a higher level of travel. This objective is also significant for achieving the city's environmental targets.

How does this fulfil the vision?

Efficient traffic flows and a vibrant urban environment demand growth in vehicular traffic to be suppressed in crowded urban environments to enable a better balance between supply and demand.

What is required to fulfil the objective

Alternatives to the car must be more efficient and attractive. But this alone will not reduce traffic growth. Additional and targeted measures are required to limit vehicular traffic, by taking capacity away from vehicular traffic, and by way of control, by putting a price on road traffic using congestion taxes and parking fees.

What will happen if we do not do this?

Forecasts show that if nothing is done, traffic in the street network throughout the entire city will increase 50–60 per cent by 2030, especially in the suburbs. Streets will become more crowded and peak-hour congestion will cover a wider area and last longer. Journey times will increase and become less reliable. More vehicular traffic also leads to more noise, more emissions, higher road safety risks and greater severance effects.

Who is responsible?

The Traffic and Waste Management Committee is primarily responsible for reducing vehicular traffic in the inner city and must collaborate with other road authorities in the county to reduce traffic volumes to and from the city.

What is the situation today

This figure was produced with measurement data using a traffic model. Various methods were used for follow up of the congestion tax and provide partly varying results. The City of Stockholm Traffic Administration is developing a reliable method that will be applied in the future.

Objective D3

The number of people who are killed or seriously injured in traffic accidents reported to the police will be reduced by at least 40 per cent by 2020. New objectives will be established for 2030.

What results will be achieved by fulfilling the objective?

The Swedish government has adopted a long-term, vision-zero commitment for the number of people who are killed or seriously injured in traffic accidents in Sweden. Stockholm City has defined an objective to reduce the number by 40 per cent by 2020.

How does this fulfil the vision?

Road safety efforts will have progressed by 2030. Through a dedicated collaboration between police authorities and the city, traffic ethics will be raised and road safety significantly improved.

What is required to fulfil the objective

The city's road safety programme defines the measures to be adopted by the city. Speed limits, in particular, must be respected.

What will happen if we do not do this?

The human and financial costs of traffic accidents are high. An increase in the number of people who die or are injured in traffic is not compatible with a sustainable city.

Who is responsible?

The Traffic and Waste Management Committee is primarily responsible for creating a safe road and street network. The city must collaborate with the police in monitoring dangerous driver behaviour. All road users are responsible for acting safely in traffic. However, some groups are less able to manage all types of situations, such as children, the elderly and people with disabilities.

What is the situation today?

In absolute figures, this means that police statistics in 2020 will account for not more than 166 cases of death and serious injury. The figure today is 277, based on an average from 2006-2009.



Objective D4

The proportion of residents who feel that traffic does not cause a serious problem in their local district will be at least 80 per cent by 2030.

What results will be achieved by fulfilling the objective?

Traffic is a natural feature of a major city. Well-designed and planned road traffic will contribute to greater security, accessibility and access without an excessively adverse impact on the urban environment.

How does this fulfil the vision?

The vision promotes a high standard of living in all parts of the city – the purpose of well-planned traffic must be to reduce problems in local environments.

What is required to fulfil the objective

The means will vary, based on the local circumstances or purpose of the street environments. However, traffic will be more adapted to local requirements as regards speed and use of the street reserve.

What will happen if we do not do this?

More traffic and an incorrectly planned street environment will intensify local problems with noise, barriers, insecurity, congestion, lack of parking space, and so forth.

Who is responsible?

The Traffic and Waste Management Committee and the city district committees are primarily responsible for the local street environment.

How can it be measured

The proportion of residents who feel that motor vehicular traffic is a problem in their own local district. In the 2010 environmental survey, 19 per cent claimed that traffic is a relatively, or highly, serious problem in their own city district.



A strategy is a living process

Many changes will occur over the next 20 years leading up to 2030, not just in Stockholm but also in the surrounding world for example, with the economy, technological development, oil prices and individual and collective priorities. These are difficult to predict and even more difficult to control. Through the strategy maintaining focus on the outcome rather than on concrete measures, it maintains a level of flexibility in a changing world. This flexibility must include the possibility of adjusting the level of ambition for goals both upwards and downwards of adding new goals and of removing goals that are no longer relevant. Accordingly, the strategy should be revised and updated as necessary. The Traffic and Waste Management Committee bears main responsibility for assessing when such revision is suitable based on continuous follow up of the goals.



The next phase

Setting goals is just the start of a process. The goal itself accomplishes nothing, awareness and active effort is required to reach the goal and follow up trends. This requires action plans that specify in more detail the types of initiatives required to reach the goals within a shorter time span.

The strategy's role and function

A strategy describes a general direction: which goals one wishes to achieve and how to reach these goals when many of the underlying conditions are unknown or uncertain. In other words, this is not a plan, which is a defined number of measures to reach a specific target and where the underlying conditions are somewhat more stable. If too many factors are changed, a new plan is needed; if Plan A proves impossible, Plan B is needed. A strategy must be more flexible and should be adapted to a changing operating environment.

The most important element of a strategy is not how one reaches the goals but that the goals are achieved. A strategy is needed to ensure that all tactics, programs and plans are aimed at the same goals and to manage any possible conflicts that arise between the various priorities. If you don't know where you are going, the route you choose is not important.

Concrete measures are first described in the action plans. The first time budgets can be specified, socio-economic benefits calculated and the exact consequences described for all traffic groups, residents and business is in an implementation decision.

Follow-up

Goals must be followed up. The goals selected are specific and pertain to fixed dates, though their measurement indicators remain to be defined. The majority of indicators are based on items that are already followed up as part of the city's daily operations with short-term management by objectives. Others can be calculated from existing material. Certain indicators require additional development and clarification before a stable and accurate image of what needs to be measured can be created. The City of Stockholm Traffic Administration expects to be able to present a report on the majority of goals every second year.

Primary responsibility for follow up of the goals lies with the Traffic and Waste Management Committee, but reports to other committees and the City Council may be appropriate. Indicators should be linked to the city's shared goals and synchronised with other follow up of goals.

Strategy:

Understand the context. Set goals

- What do we want to achieve?
- Why?

Action Plan

Describe the general structure, measures

- How will we achieve this?
- Where?

Implementation

Plan. Build

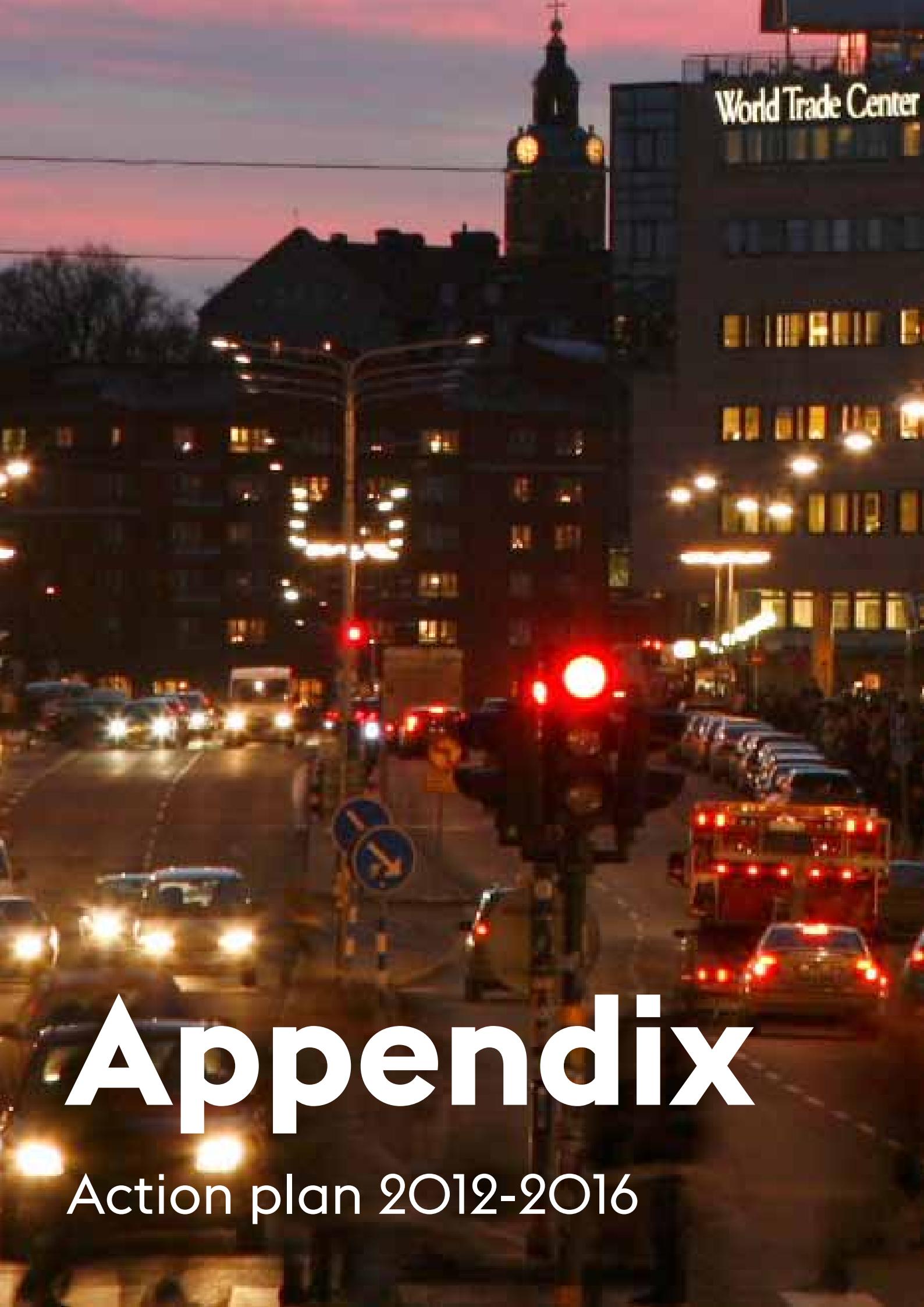
- What should it look like?
- How much does it cost?

Follow-Up

Measure. Evaluate

- What was the result?



A night photograph of a city street. In the foreground, there's a road with several cars and a truck. A red traffic light is visible. In the background, there are buildings, including a prominent one with a tower and a sign that reads "World Trade Center".

World Trade Center

Appendix

Action plan 2012-2016



Introduction

This appendix to the Urban Mobility Strategy is a general action plan for the period 2012-2016. It describes a number of measures that contribute to fulfilling the objectives in the Urban Mobility Strategy in the short term. The action plan does not describe projects that are ready to implement, it specifies what is needed so that such specific alternatives can be detailed or other policy decisions taken. The first time budgets can be specified, socio-economic benefits calculated and the exact consequences described for all traffic groups, residents and business is in an implementation decision.

The action plan is short-term and will need regular updating, perhaps annually or biannually, in conjunction with the budget process. In this manner, a rolling four-year plan for reaching the objectives can be maintained. The first action plan contains a number of suggestions for areas needing further investigation, which will lead to new proposals regarding measures. This means that it could be appropriate to revise this plan within a shorter time horizon.

The action plan is divided into measures for the various modes of transport and measures that can promote robust and sustainable accessibility. There will be a number of conflicting goals between the various measures, but even if the measures themselves primarily concern one particular mode of transport, focus should be placed on comprehensive solutions based on the overriding objectives as part of the Urban Mobility Strategy.

A total of 21 measures are specified for:

- Attractive, high-capacity public transport
- World-class bicycle traffic
- Pedestrian traffic for a walkable city
- Freight traffic that is efficient and reliable
- Car traffic that captures the car's advantages
- Accessibility that is sustainable and robust

The current status is given for those areas where work is ongoing. In addition, connections exist to other action plans that have already been reported or prepared in other parts of the City of Stockholm's operations, in particular, the road safety action plan and the operation and maintenance strategy.

The Urban Mobility Strategy builds on one whole solution, in other words, strong links exist between the various goals that make it difficult to remove any one particular goal. The same applies for this action plan. Synergies exist between the various proposed measures that make it difficult to remove one measure and still obtain the same effect.

Attractive, high-capacity public transport

Public transport should be the backbone of the city's and the region's transport system. This requires public transport with sufficient capacity and which poses an attractive alternative for many more journeys, particularly at those times when and those locations where the majority of people wish to travel. High-capacity public transport is the key to increased transport capacity on the city's streets and roads.

Each day, about 250,000 journeys are made with the rapid transit buses in Stockholm – this exceeds the commuter train. Across the entire county, close to one million journeys are made by bus – almost as many as by the Metro. Buses comprise a key component of the public transport system, and rapid transit buses – the blue buses in the inner city and suburbs – are an integrated part of the main network. In other words, they fulfil the same function as the Metro and the commuter train. This presumes a quality and level of accessibility comparable to tram and rail traffic. The rapid transit buses do not have this level of accessibility at present. The goal for transit traffic in the inner city, irrespective of whether it is performed by buses or trams, is a speed of 20 kph. Currently, the average speed for rapid transit buses in the inner city is 14-15 kph. The rapid transit buses get caught in traffic, which results in unacceptable travel-time reliability for part of the main network in the city's transport system.

Proposed measure 1: commence work with the main network

Those thoroughfares identified in the main network strategy in the inner city and suburbs must be developed with the aim of reaching the goal of an average speed of 20 kph, through prioritising public transport over other road users and stationary traffic. The City of Stockholm Traffic Administration proposes that two thoroughfares are selected during the period 2012-2016 and that measures are prioritised based on passenger benefit and the ability to increase the thoroughfare's transport capacity as well as the speed of the bus. The pace of expansion must be coordinated with other ongoing construction projects to benefit from any possible synergies and to minimise unnecessary disruption for other road users and street functions. Comprehensive solutions must be developed to manage conflicting goals with other modes of transport, parking or the street environment.

An attractive public transport alternative in the streets will help relieve pressure from the Metro and the road network through offering an alternative to the car for more journeys. Achieving such an attractive public transport alternative with an average speed of 20 kph will require measures including the following:

- prioritisation of moving traffic over stationary traffic, in other words, parking places will be removed from certain locations during the daytime or parts of the day to provide space for dedicated lanes.
- space will be taken from other moving traffic to create dedicated lanes for public transport. Left turns, thoroughfares and other disruptive manoeuvres may be prohibited.
- Prioritisation of public transport at traffic lights will be increased, which means a deterioration in accessibility for all traffic that crosses the transit traffic.

- ✓ **Status:** an action plan for working with the main network in the inner city has been produced and work has started on line 4

It is important that lanes are efficiently monitored to ensure the benefit is truly captured. Enhanced monitoring also opens opportunities for using the lanes for other vehicle types at certain times and locations, for example freight traffic.

Proposed measure 2: enhanced monitoring of dedicated lanes for public transport

The possibility of enhanced monitoring of dedicated lanes for public transport will be investigated. In time, a change in the law may be required to enable more efficient monitoring methods and the city will, in partnership with other interested parties, strive to promote such a change. A test with stricter monitoring of existing rules will be developed.

- ✓ Status: enhanced monitoring is included in the action plan for the main network

Public transport will never be able to be completely comprehensive, so the ability to easily gain access to a public transport hub forms a key component of the attractiveness of public transport. In the majority of cases this journey is made on foot, and enhancing the ability to reach hubs and stops on foot is a public transport initiative in itself. For longer journeys, the bicycle makes an efficient complement, but does require adequate and secure bicycle parking as well as increased opportunities to bring the bicycle onboard public transport. In certain cases, the best alternative for the passenger's needs is a connecting journey by car (so-called Park & Ride). This presupposes that safe and secure parking exists within a reasonable distance.

Proposed measure 3: connecting journeys to public transport

The possibility of reaching public transport hubs primarily on foot or by bicycle, and in certain cases by car, must be increased. Even efficient changes between public transport lines must be given greater priority. Footpaths to and from hubs must be improved, with more direct routes free of unnecessary differences in height, enhanced winter maintenance and increased safety. More secure bicycle parking with adequate capacity in the proximity of the most important public transport hubs must be given higher priority.

World-class bicycle traffic

The bicycle provides a level of flexibility and travel-time reliability that is difficult to beat in peak hours. It is also an efficient way of increasing the streets' capacity to move people who, essentially, have no impact on the environment and may even benefit the cyclists' health. There are many reasons why people choose the bicycle, but the need for a safe space in the street is shared by all of them. The number of cyclists in Stockholm has increased by about 80 per cent in ten years and the goal is that even more people will feel safe enough to choose the bicycle as an alternative to the car or public transport.

Proposed measure 4: a bicycle plan for commuting to work

A bicycle plan focused on bicycle journeys as an alternative for more commuter journeys is being produced in autumn 2011. The sections identified must be developed to create a cohesive cycle network with higher priority and increased safety. Measures must be prioritised based on benefit to city travellers and the opportunity to increase the transport capacity of the thoroughfares. The pace of expansion must be coordinated with other ongoing construction projects to benefit from any possible synergies and to minimise unnecessary disruption for other road users and street functions.

More space for cyclists means that more people will choose the bicycle and each cyclist means one less car or one place free on the Metro or bus. The needs of the cyclist when moving will need to be prioritised over the needs of stationary cars, in other words, parking places will need to be removed to create space for cycle lanes and cycle paths. Higher priority for cyclists at certain traffic lights will lead to a deterioration in accessibility for other road users that cross key cycle thoroughfares.

- ✓ Status: a bicycle plan has been adopted and is being implemented

The potential of the bicycle is at its highest during the summer half of the year, but an increasing number are discovering the benefits of using a bicycle all year long. The City of Stockholm Traffic Administration is producing new measurements to better understand the current extent of winter cycling. Being able to cycle during the winter sets higher requirements for the cyclist and the bicycle, but also presumes that the cycle path is usable during the winter.

Proposed measure 5: winter maintenance of cycle paths

A trial with more intensive winter maintenance of the key bicycle thoroughfares will be performed in winter 2011-2012. The trail will be evaluated and possibly developed in connection with the bicycle plan.

- ✓ Status: the trial must be evaluated and developed

Irrespective of the time of year for cycling, the actual bicycle must be possible to park during the period it is not being used. Exactly like a car, the average bicycle spends about 95 per cent of its time parked and in this area, new solutions are required for bicycle parking. Even solutions for enhanced regulation and monitoring of bicycle parking should be investigated.

Proposed measure 6: bicycle parking plan

The City of Stockholm Traffic Administration will make an inventory of bicycle parking in the city and develop a method for following the increase in bicycle parking spaces. Secure bicycle parking in the vicinity of key destinations, particularly public transport hubs, must be developed. The possibility of a demonstration project with a public parking garage for bicycles, for a fee, will be investigated. One alternative could be changing car parks to bicycle parking – one parking place for a car can accommodate 10-15 bicycles. In addition, bicycle parking statistics for new developments will be drafted.

- ✓ Status: an analysis of need has been completed

The bicycle sharing system comprises a flexible component of public transport for many journeys. By using shared bicycles, the need to have your own bicycle and issues with bicycle parking is neatly avoided. However, the system needs to be expanded to be more reliable and to cover a larger portion of the city.

Proposed measure 7: expansion of the shared bicycle system

The city must promote the development of the shared bicycle system in the inner city by allocating more locations for shared bicycle stations. Where suitable locations are difficult to identify, the use of

car parking spaces must be considered, provided that road safety or accessibility are not adversely affected. In time, the bicycle sharing system should also be developed in the suburbs, starting in the inner suburbs. Identification of locations for shared bicycle stations must be allocated higher priority in urban development projects.

✓ Status: work has commenced

However, a considerable amount of development is still required before the city's work with bicycle traffic can be considered comprehensive and to reach the goal of increased bicycle use.

Proposed measure 8: action plan for bicycles

The City of Stockholm Traffic Administration must prepare an action plan for further development of bicycle measures for the purpose of reaching the goal of increased bicycle use.

✓ Status: an action plan is included in the bicycle plan

Pedestrian traffic for a walkable city

Stockholm's new City Plan is called the Walkable City. This is about how to build a city with high-density and varied city districts where more of what people need or want is within walking distance. This is about bridging barriers between city districts to promote more meetings. Functional pedestrian traffic is a small, but crucial, part of achieving this. For many years, Stockholm has worked consistently with improving the physical accessibility of public spaces. The City of Stockholm Traffic Administration wants to widen the scope of this work to a holistic approach to enable favourable and functional accessibility that treats pedestrian traffic as a mode of transport just like every other.

Proposed measure 9: a pedestrian traffic plan that identifies key thoroughfares

The city must prepare a pedestrian traffic plan aimed at identifying the key main pedestrian thoroughfares. The underlying reason being to provide input for balancing between other prioritised modes of transport. The plans must identify thoroughfares and places where the transport capacity and attractiveness of the street network can be increased by raising the priority of pedestrian traffic.

With increasingly fast bicycle traffic, safety is reduced and conflicts between pedestrians and cyclists increase when they need to share confined spaces. The possibility of completely dedicated pedestrian thoroughfares must be investigated.

✓ Status: work has commenced

Proposed measure 10: better understanding of pedestrian traffic's needs

A pilot study with pedestrian traffic audits (walkability audits) was performed in autumn 2011. The method must be evaluated and developed with the aim of producing a basis for qualitative improvements for pedestrian traffic.

Proposed measure 11: coordination of operation and maintenance, road safety and accessibility

The city needs to develop strategies and concrete measures for how operating and maintenance work should be developed and coordinated with the city's work on road safety and accessibility. In 2011, the City of Stockholm Traffic Administration started a project, including an action plan, for this purpose. The aim is to increase work efficiency in parallel with raising safety and accessibility for pedestrians and cyclists.

Freight traffic that is efficient and reliable

Long before the mobility of people became such an important element of modern day life in a major city, it was goods that accounted for the majority of vehicular transportation. Deliveries of all the items that city dwellers need but cannot produce themselves – food, clothes, electrical items or services that we need such as construction, handcraft, waste collection, etc. – all remain an extremely important part of the traffic. However, there is portion that does not get the priority it deserves. The City of Stockholm Traffic Administration has become proficient at understanding people's transport needs but needs to be better at understanding and promoting the transport needs of the business sector.

In Stockholm, a number of fatal and serious accidents occur between cyclists and heavy goods vehicles. Solutions are needed that mean more efficient freight transportation that, additionally, entail increased safety for the most vulnerable road users, that is, pedestrians and cyclists.

Proposed measure 12: an action plan for freight traffic

The City of Stockholm Traffic Administration must work more intensely with freight traffic by producing an action plan specifying how the goal of keeping the haulage industry satisfied will be reached. This work will be performed together with, among others, a city logistics council where representatives for the haulage industry, business sector, and government agencies can collaborate to enhance the opportunities for more efficient goods distribution.

The action plan can also have major significance for the road safety of vulnerable road users and for the environmental impact of heavy vehicles.

The regulations governing the mobility of freight traffic in the city need to be reviewed with the aim of better meeting the needs of modern business and minimising the impact of freight distribution on the accessibility of other road users as well as with consideration for the needs of residents.

Status: work has commenced

Capacity utilization of the road and street network can be expanded through increased joint loading of goods. The O-centralen consolidation centre in Gamla stan demonstrates the potential to increase joint loading in areas where distribution by normal methods is difficult, however, experience gained in Stockholm and the rest of the world shows that such operations must be developed in collaboration with the industry.

Proposed measure 13: study consolidation centres

The City of Stockholm Traffic Administration will investigate how the city can promote the establishment of commercially operated consolidation centres and investigate the possibility of goods distribution certification to reduce environmental impact and increase road safety. Certification would be possible to link to advantages for freight traffic, for example, in the form of access to certain dedicated lanes for public transport at specified times.

Journeys by private car and parking that capture the car's advantages

The car has many advantages as a means of transport, but many of these advantages are lost in city traffic. When the number of cars becomes too high, they not only interfere with other traffic, they are primarily in the way for each other. This is inevitable and demand will always exceed supply at certain times. Accordingly, it is important to try to capture the advantages of the car in city traffic while reducing the disadvantages. Not least of these disadvantages is the difficulty of parking, which impedes the efficiency of the car for those journeys where the car must be used. Improvements in the accessibility of moving traffic will be in vain unless it is possible to find a parking place – since car drivers can only arrive after they have parked the car.

Proposed measure 14: parking in the inner city

The City of Stockholm Traffic Administration must develop and test proposals for regulation of street parking in the inner city during major parts of the day with the aim of increasing accessibility and access for visitors to park in the evening and enhancing the conditions for residents who choose street parking. The system providing a dispensation for residential street parking may need to be adjusted to better achieve the goal of 15 per cent of spaces free in the daytime and, in parallel, make it easier for residents to leave the car at home and travel in another manner.

It is not possible to reach this goal without reviewing the price of street parking, in particular at those times and locations where demand is highest.

- ✓ Status: an action plan has been implemented in 2013 and will be assessed

Parking problems are already arising in parts of the suburbs: at and in the vicinity of public transport hubs, in areas of increasing housing density and at attractive shopping areas. Parking in the street reserve in the suburbs is generally free and unregulated. Parking problems are a sign that an area is attractive but creates dissatisfaction and leads to conflicts with other goals.

Proposed measure 15: parking in the suburbs

Parking conditions in the suburbs must be more closely investigated to identify locations where the goal of 15 per cent free spaces is already difficult to reach. A method needs to be produced to identify potential problems before they arise. A toolbox to enable reaching the 15 per cent goal must be developed. Just as in the inner city, in the majority of cases, it will not be possible to reach this goal without regulating street parking, in particular, at those times and locations where demand is highest.

The strategy identifies travel-time reliability as the most important factor for functional car traffic. For many connections, it will not be possible to achieve faster travel times for car traffic, instead, favourable travel-time reliability is the same as adequate accessibility in a growing major city. A developed Trafik Stockholm (Stockholm traffic management centre) may play a key role in the management of passenger traffic and information can mitigate the effect of temporary disruptions.

Proposed measure 16: an action plan for car traffic

A plan to increase travel-time reliability for car traffic must be prepared which focuses on technical developments and commercial solutions. Scenario planning and smart services for dynamic management of traffic can be used to maintain traffic flows. In addition, monitoring of the rules for moving traffic, such as restrictions on left turns and blocking crossings, as well as a prioritisation of moving traffic over stationary traffic must be included. The participation of the public utilities will be an important success factor.

Something that will have an increasing impact on travel-time reliability during 2012-2016 (and even thereafter), are the roadworks in parallel with new infrastructure expansions, the renovation of existing infrastructure and the construction of new housing and workplaces. Over the past few years, the City of Stockholm, the Swedish Transport Administration, SL and the City of Solna have developed a system for enhanced coordination of disruptive roadworks. This needs further development, which should be performed within the framework of a developed Trafik Stockholm.

Proposed measure 17: enhanced coordination of disruptive roadworks

The planning of major disruptive roadworks must be coordinated and performed as speedily and expeditiously as possible based on the physical conditions and resources available. Further development of information efforts to provide information about future and ongoing disruptions to road traffic must be performed by the City of Stockholm Traffic Administration, the Swedish Transport Administration and SL.

- ✓ Status: developments are ongoing

Accessibility that is sustainable and robust

It is not possible to fulfil the goals in the Urban Mobility Strategy without the support, understanding and, above all else, action from Stockholmers. We are all part of the traffic and we all have a role in the transport system of a growing major city meeting everyone's needs. This requires an in-depth dialogue between the residents and the city's administrations to increase understanding, both of the difficult challenges we are facing but also of how residents on an individual basis can contribute to the solution and at the same time be able to meet their own needs.

Proposed measure 18: communication with city travellers and residents

The City of Stockholm Traffic Administration must start to increase communication and dialogue with residents and city travellers to communicate the goals, solutions and the part everyone has to play in fulfilling these goals.

The strategy indicates the need to limit traffic growth to achieve a transport system that is environmentally, economically and socially robust and sustainable. Restraining traffic growth in a major city that is growing rapidly is a major challenge and will require initiatives at every level. Promoting alternative modes of transport to the car is a key component in this equation but will not in itself lead to the goals being reached. Other measures to achieve a direct reduction in car journeys are needed.

Proposed measure 19: smart-choice measures

The City of Stockholm Traffic Administration must produce an action plan for the work with so-called smart-choice measures that helps individuals, companies or other businesses that encourage city travellers to plan their journeys in a smarter manner, to reduce congestion, environmental impact or costs. Plans for smart-choice measures are being produced, for example, for the rebuilding of Slussen, for the new city district Norra Djurgårdsstaden and for the business district in Kista. These will be followed up and evaluated so that a comprehensive plan can be produced, including a toolbox to reduce car travel even in other locations.

The one measure that has made the single largest impact on accessibility in Stockholm, in recent years, is the congestion tax. Today, congestion tax is a state tax and decisions about changes are made in the Swedish Parliament. There is an ongoing investigation into how certain congestion tax decisions can be delegated to municipal or regional level. Significant improvement in road traffic capacity and reliability as well as the possibility of fulfilling the environmental impact goal for traffic will, given time, require increased use of congestion taxes and/or parking charges as well as smart-choice measures in parallel with expansion of the road infrastructure.

Proposed measure 20: congestion tax development

The City of Stockholm Traffic Administration will, together with other regional instances, study various strategies to optimise the use of congestion taxes as part of reaching the goals in the Urban Mobility Strategy.

- ✓ Status: a developments of congestion tax has been agreed

Other strategy documents contain a number of goals for climate, energy, noise and air pollution, which will entail further measures in the transport system.

The City of Stockholm Traffic Administration needs to develop strategic thinking with regard to traffic and the environment.

Proposed measure 21: one plan for the environment and traffic

The City of Stockholm Traffic Administration must prepare a plan over the key traffic and environment initiatives, including an action plan for undertakings in the city's 2012-2015 environmental programme as well as an action plan for how the city should work to reach the goal of being fossil-fuel independent by 2030.

Summary table

All of the proposed measures are summed up on the next page in a table that illustrates the contribution of each measure to the goals stated in the Urban Mobility Strategy. The table should not be read as a grading of the effectiveness of the various measures for goal fulfillment. In several cases, several interacting parameters need to coincide for the outcome to be satisfactory. Nor does the table take into consideration any possible conflicting goals.

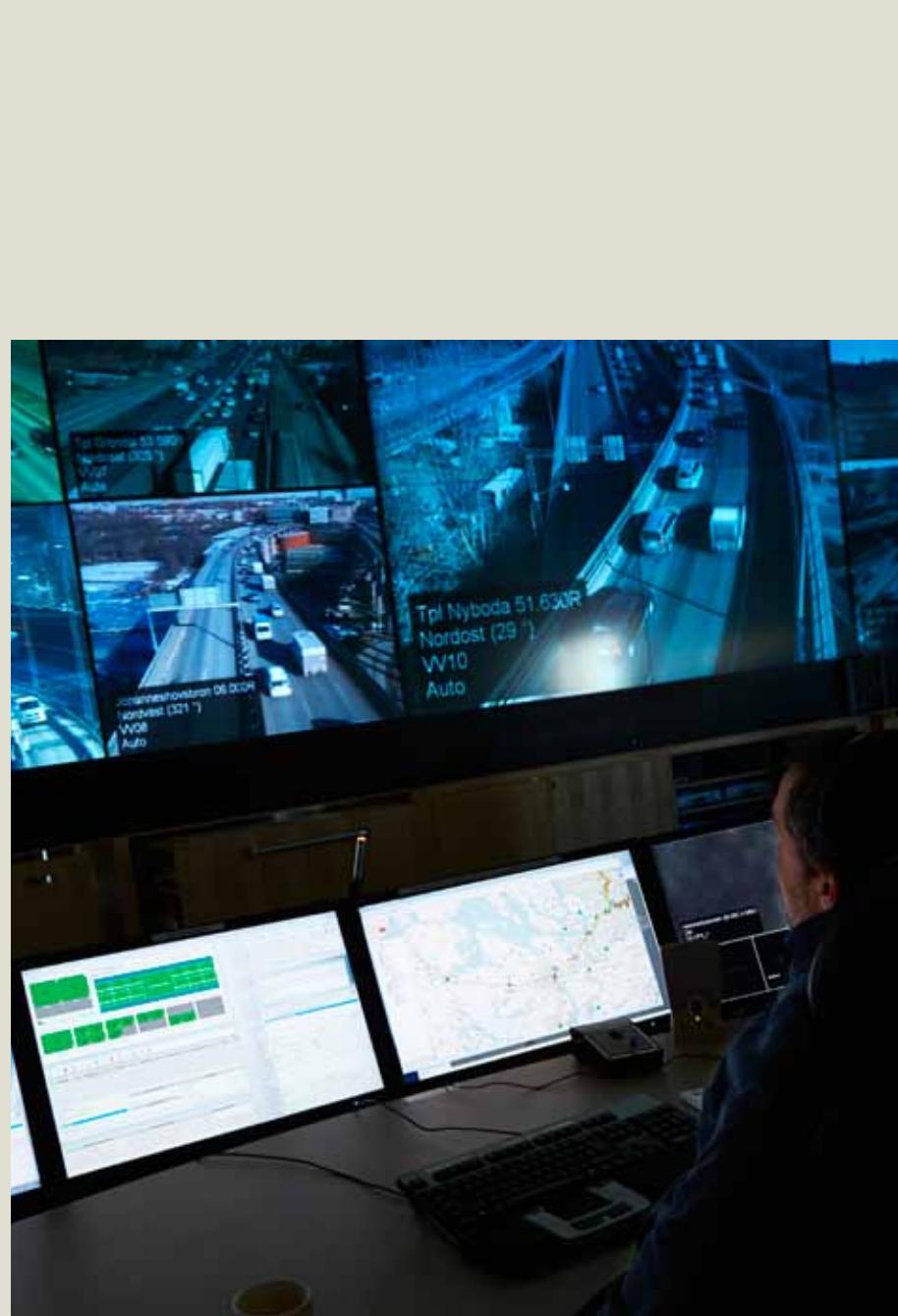
Objective				
	A: Capacity	B: Accessibility	C: Attractiveness	D: Negative effects
● = measure contributes to goal fulfilment Blank = measure has no or neutral impact (note that a risk exists of conflicting goals)				
Proposed measure				
1: Commence work with the main network				
2: Enhanced monitoring of dedicated lanes for public transport	●			
3: Connecting journeys to public transport	●			
4: A bicycle plan for commuting to work	●			
5: Winter maintenance of cycle paths				
6: Bicycle parking plan				
7: Expansion of the shared bicycle system				
8: Action plan for bicycles	●			
9: A pedestrian traffic plan that identifies key thoroughfares				
10: Better understanding of pedestrian traffic's needs				
11: Coordination of operation and maintenance, road safety and accessibility				
12: An action plan for freight traffic	●			
13: Study consolidation centres				
14: Parking in the inner city				
15: Parking in the suburbs				
16: An action plan for car traffic				
17: Enhanced coordination of disruptive roadworks				
18: Communication with city travellers and residents				
19: Smart-choice measures				
20: Congestion tax development				
21: One plan for the environment and traffic				

We are all part of the traffic

It's not just government decisions that affect the traffic. How you choose to travel can have a big impact. It has consequences not just for you, but for all of us. Your decisions can make the difference between a transport system that is efficient or inefficient, sustainable or unsustainable. You are not stuck in traffic – you're a part of the traffic.

That is what this strategy is about. How individual road users can best use the city's roads and streets in a way that makes the system as efficient as possible.

stockholm.se/trafiken



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