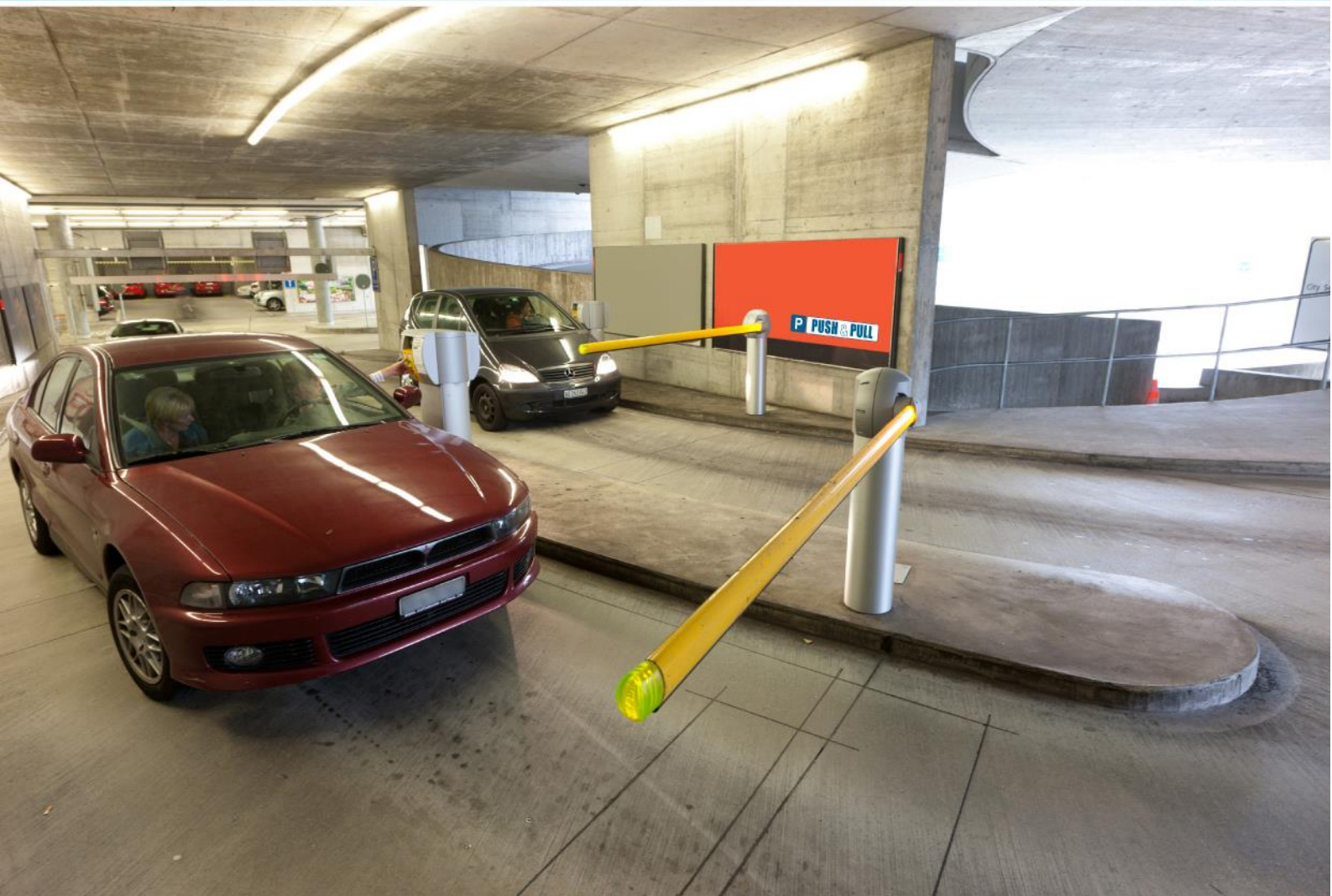


Catalogue on Case Studies for Parking Management Solutions

P **PUSH & PULL**



Parking management and incentives as successful and proven strategies for energy-efficient urban transport

push-pull-parking.eu

PUSH&PULL - “Parking management and incentives as successful and proven strategies for energy-efficient urban transport”

PUSH&PULL is a term that refers to policies offering a combination of rewards / incentives and punishment to induce behavioural change.

The **PUSH&PULL** project aims to improve urban mobility by means of parking space management combined with mobility management (MM) measures. By introducing paid parking, increasing parking fees, reducing or restraining parking supply, or implementing other similar measures, car drivers can be ‘pushed’ to use more sustainable transport modes. At the same time, the income generated from parking space management can be used to invest in and promote alternatives, thus ‘pulling’ users towards alternative sustainable modes. This is the “core-funding mechanism” that is at the heart of the **PUSH&PULL** project.

The main objectives of **PUSH&PULL** are to:

- Save energy through a modal shift from car to other more sustainable modes;
- Help local economies by encouraging a more rational and managed approach to parking and helping cities to save money by avoiding the costs of construction of additional parking, and;
- Build the capacity for followers who want to implement similar measures by providing the knowledge required to help to alleviate parking problems, and political arguments to support parking management strategies.

The project includes implementation of parking and mobility management in 7 cities and 1 University. All implementers will set up the core-funding mechanism to use money gained from parking to finance sustainable mobility.

This **catalogue on good practice on parking management** was developed by collecting information from existing studies and publications by project partners and third parties. We kindly invite you to use and copy the contents of this catalogue, and reference the **PUSH&PULL** project (push-pull-parking.eu).

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1. Introduction

In Europe, parking management as a 'push' measure for regulating private car use is diversely developed. Initially a list with best practice examples concerning parking management from mainly European countries was generated via desktop research. From over 60 examples identified, 24 best practice examples were selected and prepared as case studies using the following criteria:

- Implementation status;
- Innovative approach;
- Availability of data or documentation;
- Relevant for the implementation partners in the 'Push&Pull' project.

In addition the take up of best practice examples from New Member States or Southern European countries was encouraged in order to empower partners to implement similar strategies in those regions, focusing on topics including implementation process, communication and parking enforcement.

Case description

A template for the case description was used when information for each case was collected. Each case is therefore presented according to the same structure, as follows:

- A1) Objectives – description of what the measure(s) was/were intended to achieve.
- A2) Description of the CS – description of the Mobility Management measure(s) and other measures that together form the case
- B) Information on costs and who paid them
- C) Project objectives, indicators, data and impact/results: Objectives are defined above. The indicators measure how well the objectives are achieved. Data – includes description of data collected in order to measure the indicators. Impact/results – estimated change(s) in the indicator(s)
- D) Implementation process
 - D1) Stages – description of the different stages/parts of the implementation process
 - D2) Barriers – description of the key problems or difficulties when implementing the CS. When the information is available activities to overcome the barriers are described and if it was successful.
 - D3) Drivers – description of factors that facilitated or in one way or another helped out when implementing the CS

2. Parking Management Cases

Parking management at the University Hospital

City, Country: Freiburg im Breisgau, Germany

Year(s): Consulting the problem since the early 1990ies, Introduction of parking fees in 2001

A1 Objectives

- (I) Ongoing imbalance of parking space supply and demand has become an increasing problem for the hospital, the nearby residential area and the City
- (II) The staff council of the hospital recognised the situation as a problem for employees and initiated a “transport-environment programme”.

A2 Description of the CS

The University Hospital of Freiburg is one of the largest employers in the region and its sites, which treat approximately 60.000 patients per annum, generate enormous traffic. Given its location in the heart of the city, scarce parking facilities caused a push for the implementation of a parking management and a mobility concept for employees.

The hospital is located next to a residential area, so space is scarce, but accessibility by public transport as well as by bike is good. The increasingly problematic situation put the introduction of parking management at the heart of the mobility concept, which was initiated by the staff council and which is driven by a working group with together with the administration.

The following activities were taken on Parking Management:

- Initiative for an environmental transport program by the Staff Council of the hospital
- Survey : A survey - before the parking management was implemented and one of the first actions - revealed a modal split with 38% of journeys taken by car, 24% by public transport, 31% by bike, and 5% on foot (early 1990ties)
- Ongoing process of converting parking spaces into space for new hospital buildings: The 8000 employees had access to around 1700 parking places on site; this figure was gradually reduced due to the expansion of hospital buildings.
- Introduction of parking fees: The main activity was the introduction of a parking fee which all car-users have to pay (employees, patients, visitors). 30% of the fees are used to subsidise the job-ticket (1/5 discount).

- Parking restriction: The adjacent area (neighbourhood) was almost entirely restricted to resident parking
- Survey in 2002: A survey after the introduction of the parking management amongst employees revealed a modal split with 22 % of journeys taken by (own) car, 14% by public transport, 16% by bike, and 3% on foot (2002). The remaining 37% use a combination of various means of transportation
- Establishment of a working group for the whole project.

These attendant activities were taken before or at the same time:

- Improved accessibility by public transport: Public transport services have been improved over time; most important was a new stop of the commuter rail-line next to the site (instead of changing at central station, which made trips 20 min. longer)
- Cycling concept: Improving cycling facilities and organising cycling days => Concept for bicycle parking, new parking facilities with weather protection and creation of a bicycle brochure; implementation of changing rooms and showers
- Establishment of an environment-friendly-traffic-program in the “internal” public relations.
- Overall mobility information: Mobility information when hiring new personal by the staff council
- Coordination: Individual working time models and flexible working hours; coordination with public transport timetables

B Costs and where the money came from

Implementation

There was no external financial support for plans or measures. The financing of measures were taken by the hospital. Details about the costs and the number of ticket machines are being asked

The new station at the University Hospital was just like the bicycle concept was funded by the budget of the hospital: In 1997 about DM 70,000 (today about 35.000 Euros) were invested in the cycling concept. More than DM 1 Mio. (today about 500.000 Euros) have already been invested in the station from the construction budget of the hospital.

There is a budget, where measures can be implemented with, by the construction administration for the internal AG environment and transport. The amount in 2006 was about 20,000 Euros. The provided money in that year was used e.g. for the optimization and the construction of new bicycle parking facilities.

Fees for Parking

For patients/visitors the parking fee is 0.50 Euro per 30 Minutes. There are several parking lots available; at one location (Elsässerstraße) special long term rates on a weekly basis exist. Long term patients have to contact the hospital authorities.

For employees the parking fee was 0.50 Euro per day until 2011. From June 2013 the parking fee is 1 Euro per day, because 1 Mio. Euros were spent to build new parking decks (now 425 instead of the previous 252 parking spaces). The number of parking spaces at another location parking (Breisacher Straße) were reduced by 142 in favor of a new hospital building.

C Project objectives, indicators, data and impact/results

OBJECTIVE	INDICATOR	DATA USED	IMPACT/RESULTS
<p>(I) Ongoing imbalance of parking space supply and demand has become an increasing problem for the hospital, the nearby residential area and the City</p> <p>(II) The staff council of the hospital recognised the situation as a problem for employees and initiated a “transport-environment programme”.</p>	<ul style="list-style-type: none"> The accessibility of the hospital for all employees without their (own) car 	<ul style="list-style-type: none"> Comparing numbers of available parking spaces (before and after) survey amongst employees* 	<p>the number of parking spaces has been decreased by 300 at the hospital</p> <p>400 employees switched to other modes of transport and don't use their car any more to commute.</p>

D Implementation process

D1. Stages

The CS was implemented, as follows, in the following stages:

Stage 1: 1990: A political discussion in the summer of 1990 about air pollution and increase in ozone levels due to the increase of the MIV => internal discussion of the topic “environmentally friendly way to work” => Initiative for an environmental transport program of the University Hospital in 1990 through the initiative of the Staff Council of the hospital

Stage 2: 1992: Opening of a nearby new train station

Stage 3: 1994: The steering group “Environment” was founded at the University Hospital. In this group all environmental issues of the hospital are worked on and new approaches for

environmental issues (including transportation) were discussed.

Stage 4: 2001: Introduction of parking fees, escorted by a system of incentives not to come to work by car

Stage 5: 2002: A survey amongst employees revealed a modal split with 22 % of journeys taken by (own) car, 14% by public transport, 16% by bike, and 3% on foot (2002). The remaining 37% use a combination of various means of transportation

D2 Barriers

Barrier 1 – There was great resistance to the implementation of parking management on the part of car drivers (employees), as parking spaces were removed on the grounds of the University Hospital from the employees to the benefit of patients and visitors parking.

Overcome: **System of incentives** provided by the hospital to move employees to use environmentally friendly means of transportation – instead of their car - and the anchoring of the mobility management in the “operating agreement agenda”.

The incentives are: Employees who are notify in a written form at the hospital office that they refrain from using the parking lot can choose between three options (service agreement Universitätsklinikum Freiburg):

1. **Bonus Policy:** The bonus scheme covers those who come by bike or walk to work. Depending on the distance of the residence they will get an annual salary bonus for their environmentally friendly behavior: € 50 in fare zone A, 55 € in fare zone B, 60 € in fare zone C or beyond.
2. **Regional monthly pass for public transport:** It is offered as a subsidized ticket from the University Hospital Regio-monthly ticket for € 33.50 (instead of € 41.50). It is transferable, which means it can be used privately by two adults with up to four children.
3. **Annual Regio-Card:** The employees get a subsidy from the employer for the annual card of the Freiburg Transport Association for about 80 €. The annual amount can be paid by the employees in two rates of € 157.50. The transferable regional annual pass can be purchased for € 335 instead of € 415.

D3 Drivers

Two **main drivers** can be identified:

Driver 1 – The high imbalance of parking space supply and demand has become an increasing problem for the hospital, the nearby residential area and the municipality, so a solution has to be found, not only by the hospital, but for the municipality as well.

Driver 2 – The Staff Council of the hospital was very innovative in the 1990ies years and preparing the hospital for the upcoming years with an “Initiative for an environmental transport program”.

The description was based on the report

- http://www.mobilitaetsmanagement.nrw.de/cms1/download/fops_bmm_fallstudien.pdf
- http://www.effizientmobil.de/fileadmin/user_upload/effizient_mobil/Download/Wettbewerb/MOB_EB_Mob_Management_Freiburg_geaen.pdf
- <http://www.badische-zeitung.de/freiburg/uniklinik-mitarbeiter-muessen-doppelte-parkgebuehren-zahlen--72416365.html>
- http://eltis.org/index.php?id=13&lang1=en&study_id=3377%20%2830.4.2014%29

Workplace parking levy (WPL)

City, Country: Nottingham, UK (England)

Year(s): 1998 up to 2014, implementation started in 2011 (with payment in April 2012)

A1 Objectives

- (I) Constrain congestion in peak periods and to limit it to relative to other areas against which it can be benchmarked¹.
- (II) Enhance attractiveness of Nottingham as place to do business.
- (III) Funding of other transport measures (especially Nottingham's tramlines 2 and 3) is a sub-objective of both of the above –.

A2 Description of the CS

The WPL scheme levies a charge on occupied private non domestic off street parking places i.e. those occupied by vehicles used by employees, regular business visitors or pupils/students. These are referred to as Workplace Parking Places (WPP). The scheme covers the entire Nottingham City Council area. Currently the charge per WPP is £362 (April 2014 to March 2015) per year although this is set to rise above the rate of inflation up to 2016. This escalator aims to coincide with the completion of the public transport improvements which the levy part-funds. Employers apply for a licence for each of their premises; this states the number of WPP they wish to use and they then pay the appropriate Levy. Frontline health and emergency services premises receive a 100% discount from the charge, as do employers with 10 WPP or fewer. Target groups are Employers with more than 10 staff; and these staff themselves, when commuting by car to work.

The scheme has been implemented successfully and without systematic non-payment or other protest from employers affected by it. The scheme is very cheap to run (about 5% of revenue is used to operate it). In terms of impacts, the scheme is very recent, so congestion monitoring shows little change so far in traffic levels. The local economy has fared similarly to that in other similar cities in the UK since scheme implementation.

¹ Congestion is primarily a Peak Period (07:00-10:00 and 15:00-18:00) problem in Nottingham and one of the objectives of the WPL package is to constrain this relative to other UK Cities. The WPL scheme operates 24 hours a day and thus is likely to have some impact to travel patterns throughout the day.

B Costs and who paid them

Scheme development costs were estimated in 2001 at £1.7 million (2001 prices). The actual outturn cost is unknown. Operating costs are modest, at under £400,000 per year, and are financed entirely from the WPL income, of which they make up about 5%.

1. The WPL was chosen instead of a road user charging scheme in part because it was cheaper and simpler to implement and operate. It also directly impacts on commuting by car, considered to be the key driver of congestion in Nottingham.
2. It is estimated by staff involved that the implementation costs were in the region of £4 million (€4.8 million), spread over a roughly 10 year period. Operating costs are financed from the levy income and require about 5% of that, which is highly favourable compared to road pricing schemes such as that in London.

C Project objectives, indicators, data and impact/results

OBJECTIVE	INDICATOR	DATA USED	IMPACT/RESULTS
<p><i>(I) Constrain congestion in peak periods and to limit it to relative to other areas against which it can be benchmarked.</i></p> <p><i>(II) Enhance attractiveness of Nottingham as place to do business.</i></p> <p><i>(III) Funding of other transport measures (especially Nottingham's tramlines 2 and 3) is a sub-objective of both of the above – although this became more of a key objective in the run-up to implementation in October 2011.</i></p>	<p><i>Remarkable: Scheme development costs were estimated in 2001 at £1.7 million (2001 prices). The actual outturn cost is unknown. Operating costs are modest, at under £400,000 per year, and are financed entirely from the WPL income, of which they make up about 5%.</i></p>	<p><i>congestion monitoring</i></p>	<p><i>In terms of impacts, the scheme is very recent, so congestion monitoring shows little change so far in traffic levels. The local economy has fared similarly to that in other similar cities in the UK since scheme implementation.</i></p>

The scheme has been implemented against an economic background whereby the UK economy is rebounding from a recession, this has been reflected by an increase demand for travel.

D Implementation process

D1. Stages

The CS was implemented, as follows, in the following stages:

Stage 1: 1998-1999- Nottingham City Council began to consider such a scheme but could only commence planning once the enabling legislation was passed in the UK Parliament (Transport Act, 2000).

Stage 2: 2001-2003- The initial plan in the 2001 Local Transport Plan for the city was to have the WPL in place by December 2003 or shortly thereafter. The key stages within this plan were data collection and modelling during 2000 and 2001; consultation and scheme development from 2000 to 2002; publication of the legal definition of the scheme in summer 2002; thereafter a public inquiry (hearing) on the plans; a decision by national government to approve the scheme, in spring 2003; and the scheme's actual implementation in summer 2003.

Stage 3: 2006-2008 - The WPL scheme and associated package of public transport investment has been designed to directly or indirectly tackle congestion. The proposed WPL scheme and its supporting draft WPL business case (July 2007) underwent a public consultation process including a public examination during the summer and autumn of 2007. An Equality Impact Assessment, included in the Business Case, was undertaken as part of the scheme development process. In December 2007, the City Council's Executive Board, having considered the findings of the public consultation, agreed in principle to proceed with developing the scheme and submitted an updated WPL Business Case (April 2008) along with the approved WPL Order to the Department for Transport in May 2008 for confirmation by the Secretary of State for Transport.

It is intended to implement a fully operational scheme by the proposed start date of April 2010 in line with the assumed start of construction on NET Phase Two (tram lines 2 and 3).

Stage 4: 2011-2012 scheme started without charging in October 2011 and charges have been paid since April 2012.

D2 Barriers

Barrier 1 – lack of political acceptability - businesses and others criticise the scheme, for three main reasons. They see it as:

- an additional burden on business and thus damaging to a city's economy.
- ineffective as a tool to combat congestion.
- unfair on the motorist who already carries a high tax burden.

How barrier was overcome: The municipality gathered more and stronger arguments and continued the communication. It was vital to convince politicians first in order to gain wide political support during the implementation of the scheme.

Barrier 2 – no other municipality in Britain or the rest of Europe had ever before tried to implement a WPL so it was difficult to know how to do it, especially as the legislation does not specify exactly how such a scheme should be implemented and operated.

How barrier was overcome: The municipality secured high level legal advice and assembled a multidisciplinary project team to work through the practical problems and issues. This was achieved by developing policies to provide a detailed scheme which followed the spirit of the underpinning legislation where that legislation was not sufficiently specific.

Barrier 3 -in order for a scheme to be approved by Government, the City Council had to be able to demonstrate (taken from GNLTP2, ch 12):

- The impact of the levy itself in tackling congestion,
- That some improvements in transport provision have been made before charges were introduced,
- That there has been full consultation on the scheme, and
- That plans for spending the proceeds are ring fenced for improvements to local transport and consistent with the objectives of the LTP.

How barrier was overcome: The municipality asked for help from researchers and experts in order to demonstrate the positive effects of the scheme on the points above. This was then synthesized into the 2008 WPL Business Plan (Full ref needed as this is a key document: Nottingham City Council (NCC), 2008. *Workplace Parking Levy Business Case* [online], Nottingham: Nottingham City Council, April 2008, online,; <http://www.nottinghamcity.gov.uk/CHttpHandler.ashx?id=2672&p=0> [accessed 03/01/2013].)

Technology was not a barrier, as the scheme was designed to be simple to implement and operate (indeed this was a reason for choosing it). Environmental aspects were not a major driver, and the possible commercialisation of the WPL concept has only become important since the scheme was implemented. The regulatory authorities were broadly supportive.

D3 Drivers

Driver 1 – political stability. City of Nottingham is solidly Labour politically so politicians are unlikely to be voted out of power on the basis of one scheme or measure. This allows these politicians to take more risks and a more strategic long term view than may be the case for politicians in more politically volatile cities.

Driver 2 – a strong team of council officers (civil servants) working on the scheme at the Council, from 2000 onwards, has been an important factor in its success. Supportive central government civil servants, especially in the first part of the 2000s, were also important.

Driver 3 – availability of some additional financing from UK Department of Transport through the LTP system, at least between 2000-2008, to fund the development of the WPL.

Extremely careful planning of the scheme has been key to its successful implementation. Factors such as implementation of controlled parking zones on streets around major employers, effective methods to count workplace parking places, effective but simple registration methods for employers and so on had to be developed to function perfectly, and in detail, in order for the scheme to be a success. This is all the more the case when the scheme is a controversial one like this because there is much public and media attention focused on trying to find problems with the way in which the scheme is designed and operated.

Sources based on an interview with Simon Dale Nottingham City Council and Steve Ison Loughborough University plus on a paper written by Simon and on various transport policy documents from the City Council.

See also:

- Dale, S. J., Frost M.W., Gooding J., Ison S. G. and Warren, P., 2013, Workplace Parking Levies: the answer to funding large scale local transport improvements in the UK? *13th International Conference on Competition and Ownership in Land Passenger Transport*, Oxford.

Experience of parking management at 11 UK workplaces

Country: UK

City: Various

A1 Objectives

This case is actually a number of cases from large UK workplaces that implemented parking management. The objective was to show how they did so and the impacts that resulted.

A2 Description

The case study is based on empirical research (surveys and interviews) carried out at 11 UK workplaces that already charge staff to park and it considers the process that was adopted to implement the charge; the barriers faced; the schemes ultimately implemented; and their effects.

B Costs and who paid them

In all cases the implementation costs of parking management on site were paid by the organisations themselves using existing resources. The parking charges introduced then generated an income stream that in the main was used to cover operating costs and to improve the quality and security of the car parks and associated traffic management, although in some cases also to fund alternative transport. In a few cases, the costs of on-street parking management around the site were paid by the local authority (municipality).

C Project objectives, indicators, data and impact/results

All the cases reviewed had a problem with parking, and paid parking at their site(s) was introduced in order to solve this problem. Typical problems were a shortage of parking for certain user groups, and congestion and safety problems on site caused by too many vehicles looking for a parking space, and/or vehicles parked inconsiderately. In terms of the actual impacts of the measures after implementation, very few measured changes in travel patterns. Their main concern was whether their problem had been solved. The table below summarises which organisations did what. The cases date from 2002-2004 so the costs and charges should be considered in the light of this.

The term “big bang” implementation in the table refers to the parking management scheme being introduced in one go, within a very short period. Whilst the implementation period may have been short, this was in many cases preceded by a long period of planning and consultation. It can also be seen that, in a minority of cases, schemes were modified after implementation. The term “overspill” refers to parking that shifts from the site before charges are introduced to streets around the site once charging starts.

Case study summaries

	Years in place	Reasons	Speed of introduction	Length of intro	Install. Costs	Staff charge	Visitor charge	Income related charge	Exemptions?	Part of wider TP?	Modifications?	Overspill?	Use of funds?
Midlands Council	4	n/k	Big bang	1 yr	Low	£16/mth	n/a	FT/PT	Disabled	N	Y	Slight	n/k
Eastern Hospital	10	Congestion on site	Incremental	1 yr	n/k	40p/day	60p/hr		Disabled; vols.	Y	Y	Y	Parking; TP
East Mids. Hospital	6	Congestion on site	Big bang	6 mths	n/k	£55/yr	£1/hr	FT/PT	Disabled; vols.	Y	Y	YY	Parking; TP
East Mids. Hospital	6	Congestion on site	Big bang	1 yr	n/k	60p/day	60p/hr	N	Disabled; vols.	Y	N	YY	Parking; patients
Northern University	3	Lack of parking	Big bang	1 yr	n/k	£135/yr	£2/day	N	Disabled	N	N	Slight	Parking; security
Grampian NHS Trust	2	Lack of parking; planning	Incremental	1 yr	£300k	70p/day	70p/day	Y	Disabled	N	Y	YY	Parking; security
Midlands University	N/k	Parking congestion	Big bang	18 months	N/k	50p/day	50p/day	N	Cleaners	N	N	N	Parking; security
Robert Gordon University	0.15	Lack of parking; planning	Big bang	2 yrs	£160k	£1.50/day	£1.50/day	N	Disabled; car-sharers; essential users	Y	N	YY	Parking; TP
Scottish University	3	"Wild" parking	Big bang	18 mths	£280k	£80/yr	n/a	N	Disabled	N	N	N	Parking; security
Scottish Hospital	3	Raise funds	Big bang	1 yr	£300k	£80/yr	£1/day	Y	Disabled; vols	N	N	N	Parking; patients
Sheffield University	5	Congestion on site; lack of parking	Big bang	2 yrs	Significant	£6 - £30 per month	£2/day	Y	Disabled	Y	Poss.	YY	TP; Parking; security

N/k = not known
 Vols. = volunteers
 TP = travel plan

D Implementation process

Some respondents said that they had extremely lengthy consultation and a parking charge took several years to implement. Others managed it in little over 9 months but the average appears to have been two years. Grampian NHS Trust was not unusual when it commented that its consultation process was “Very lengthy and complex. Charges were discussed and agreed through a strategy group which included representatives from all interested parties on site, including patient/public representatives (via the Local Health Council).”

Consultation took different forms most notably: surveys, consultation meetings, focus groups and in the case of certain respondents, formal negotiations with Unions. All interviewees stressed the importance of consultation to the process but also recognised that it would not resolve all opposition before the scheme was implemented.

Whilst two sites introduced their charges incrementally (one from a very low rate of 20p per day initially²), the majority had implemented charges in one go. This did not mean that charges could not rise further. Robert Gordon University, for example, notes explicitly in its guidance to staff on parking charging that it reserves the right to increase charges. In some cases, charges were introduced at different times at different sites, or for different car parks, but at the same level of charge as in other areas.

As noted above, in the majority of the case studies, the parking charge was introduced in response to a problem, where there had been no parking charge before. Thus any introduction of charges and major re-organisation of parking management was likely to be perceived as a “big bang” approach; but it can also be argued that a non-incremental approach was necessary to solve major parking and congestion problems. Nonetheless, several respondents made the point that they were likely to increase parking charges further.

Key lessons that can be drawn from the implementation process were as follows:

- Manage consultation meetings must be carefully managed.
- Good communication at the planning, implementation and operational stages is crucial.
- Those implementing the charge should be ready for opposition and have prepared counter arguments to key objections.
- Staff should be treated equally with regard to having to pay for parking.
- Working in partnership with the local authority can help to avoid difficulties, such as parking overspill, before they arise.
- Use common sense not least in terms of not trying to achieve too much in the first instance since it will cause a “knee-jerk reaction” and you need to make sure you get the support of the staff. This may involve a charge in the first instance which is not too much of a disincentive so as to get the principle of a charge in place and then you “can look at the rates”.
- Having clear and transparent criteria for issuing permits is crucial.

² It was stated that “if we’d introduced 40 pence and 50 pence to start with it would have created some difficulty”.

- Implementation and acceptance can be eased by selling the benefits such as “you are going to get CCTV and ...” and “we found that since we introduced a parking charge car theft has reduced by 75 per cent and frequently publicise that car crime has gone down”.
- Accept that the parking charge may not be a deterrent to car use.
- Being open and transparent about the purpose of charging, how it will be implemented, and how its impact will be monitored – treat it as a “major change initiative”.
- Offering alternatives to driving to work and paying the charge.

D2 Barriers

The main barrier to the implementation of charging was opposition from staff, as might be expected. This opposition was never fully overcome – there has to be an acceptance that some staff will always remain opposed to the idea of paying for parking that was previously free to use – but it was much reduced by the following means:

- Widespread and sometimes lengthy (over years) consultation with staff and unions.
- Making the scheme simple to understand and use.
- Use of the money raised to fund improvements in the quality of remaining parking.
- Making everyone eligible pay, with no exemptions for example for senior staff, and in some cases by making charges related to income, so that staff on higher pay paid a higher charge.
- Allowing greater access to parking for those with less good alternatives to driving – those living away from good public transport, and/or those with caring responsibilities, for example.
- Publicising good news stories, for example about the reduction on on-site car crime after the introduction of charges.

In addition, it was obvious from all cases that opposition to the scheme reduced to a low level after it was introduced, once people became used to it and could also see that it reduced on-site congestion and made it easier to find a parking space.

D3 Drivers

The main driving factor was the severity of the parking-related problem on the site. This was so severe that not charging was not an option. Secondary drivers were the management support for parking charging that was observed at each site (however, this was a product of the severity of the problem); and the dedicated site management staff who were in most cases key actors in designing and implementing the scheme. Had they been less skilled or perseverant in the face of considerable staff opposition, the scheme would have had few chances of successful implementation.

This case study is based on and in some cases uses text from the following paper. The case study is written by Tom Rye, one of the paper’s authors.

- Rye T and Ison S (2005) Overcoming Barriers to the Implementation of Car Parking Charges at UK Workplaces, *Transport Policy*, Vol 12, 2005 pp. 57–64.

Parking lot concept Phoenix West in the context of the mobility management of Dortmund**Country:** Germany**City:** Dortmund**A1 Objectives**

The City of Dortmund makes it possible for developers of new buildings to build less parking with their development if they at the same time submit a mobility concept/plan. This is in order to reduce the reliance on the private car for trips to the new/expanded building.

A2 Description of the CS

The old industrial City of Dortmund (about 583,000 inhabitants) in the Ruhr area is significantly affected by structural change. The ambition of the City is to make a transformation from an industrial city into a major center of services and technology in North Rhine-Westphalia. In this context, Phoenix West - formerly a steelworks – is being developed into a modern technology park with up to 6,000 jobs on an area with about 110ha. The park was designed to be built at high density and with high quality buildings and, related to this, a sustainable mode share for trips to the site is also an objective.

The City of Dortmund makes it possible for developers of new buildings at Phoenix West to build less parking with their development if they at the same time submit a mobility concept/plan, for example that they will install bicycle racks or other storage options for bicycles. In cooperation with the city and other experts, analyses of business trips and mobility behaviour can be carried out in order to create a customized mobility concept for the company.

Parking management at Phoenix West by the City of DortmundReduction of parking space requirements/parking standards:

The specifications in the development plan (in German: “Bebauungsplan”, a legally binding plan required to enable development) permit only a few of the required parking spaces to be located on the surface. Construction of underground or parking structures is expensive. Alternatives to reduce the number of parking spaces to be built are as follows (these can be combined):

- Easement on a property nearby (so the walking distance between parking lot and workplace increases)
- Transfer of money to the City, instead of building parking lots (7.000 € per parking lot)
- Reducing the parking space requirement by means of a mobility concept

However, some form of reduction of the parking space requirement is essential for negotiations with the City.

The parking space requirement is calculated according to an individual assessment in the planning permission for the company (determining by the number of jobs, attendance rate, car user-share and so forth). However, when the number of jobs is not known, then the calculation is performed according to the specific tables (BauO NW) in this case: 1 parking lot per 30 m² of usable office space.

This requirement can be reduced by building cycle parking spaces, as follows:

- cycle parking for 5% of employees: 2.5% fewer car parking spaces are permitted.
- cycle parking for 10% of employees: 5% fewer parking spaces.
- cycle parking for 15% of employees: 7.5% fewer parking spaces.

An added bonus will be guaranteed if the creation of a locker room (incl. shower) is designated: 1 parking lot can be saved.



High-quality bicycle parking

© Andreas Meißner

Station of the bicycle sharing scheme:

Metropolrad Ruhr

© Andreas Meißner

Further opportunities for reductions in parking spaces can be achieved through agreements in the context of a mobility plan, as follows:

The City of Dortmund offers mobility consulting services for the enterprises at Phoenix West:

- Improvement of processes in business trip logistics (goods traffic)
- Job tickets or other public transport offers
- Measures to promote carpooling
- Other image-promoting measures
- Construction of bicycle parking facilities / showers / changing facilities

Development of a mandatory program of measures ("urban development contract") for example:

- Obligatory introduction of Job-Tickets for the staff
- Contract with a car-sharing company
- Construction of bicycle parking facilities, bicycle facilities in the building, stacking spaces, automatic parking racks
- parking management of the companies parking lots etc.

The impact of the reduced parking requirements is subject to annual monitoring, and companies must pay if there is a failure to comply. The money goes into a foundation that ultimately can pay for additional "Community" parking spaces.

B Costs and who paid them

Costs are unknown or not documented. Explicitly for mobility management costs are incurred so far only for the Mobility Guide (publication by the LEG) and in the form of staff hours for consulting. The costs of cycling infrastructure are included in the overall costs of land development. In addition, the costs for the bus services are not published.

C Project objectives, indicators, data and impact/results

OBJECTIVE	INDICATOR	DATA USED	IMPACT/RESULTS
<i>Reducing the number of build parking lots and therefore a positive effect of the work-travel choice towards a sustainable mode of transportation</i>	<i>A modal shift (starting with about 80 % car use in the beginning)</i>	<i>Counting cars before and after the measure; monitoring of the amount of job tickets, number of bicycle facilities</i>	<i>Unfortunately the development of the whole Phoenix West area is rather slow and therefore big amount of space is unused; Dortmund over all is facing a dramatic decline in its economic performance. A publication in 2009 reported that 30 companies with about 50 Employee are located Phoenix West. Especially the offers for mobility consulting and the bicycle facilities were used.</i>

D Implementation process

D1. Stages

- Installation of the master plan: “Mobility Dortmund 2004”
- The Dortmund mobility management concept is part of the urban transport master plan called “Mobility Dortmund 2004”

The measures that make up the master plan include:

- promotion of mobility management in companies
- mobility management for the city administration
- specific target group mobility management (primary schools, vocational schools, companies)
- Mobility Management in Urban Planning / Master Plan Mobility establishment of a Mobility Centre
- Promotion of carpooling
- Creation of new public transport services
- With the Council Decision on 08.11.2007 the amount of “commuted payment” (transfer of money to the Council instead of building parking spaces, cost 7.000 € per parking space) was fixed; before that this amount had been flexible
- Development of (road) infrastructure and bicycle paths in Phoenix West up to 2009

D2 Barriers

No barriers were reported.

D3 Drivers

The Dortmund mobility management concept is part of the urban transport plan, the so-called master plan mobility Dortmund 2004, which was adopted by all major parties in the city parliament and thus deeply rooted in the administration. The mobility management is solidly integrated in the future planning of the City.

The City Council understands itself as a role model and implements concrete measures. This commitment has been rewarded: The City of Dortmund reached 2nd place in the German wide contest „Best Practice in mobility management”. In total six companies and municipalities were given awards by the German Federal Environment Ministry and German Energy Agency (dena) in recognition of exemplary mobility management and respective GHG reductions in transport. Within this German wide contest „Best Practice in mobility management“ exemplary projects aiming at changes of car drivers towards more sustainable passenger transport like PT or car pooling were searched and awarded.

Details: what document(s) was (were) used for answering the questions.

- „Mobilitätsmanagement – Wissenschaftliche Grundlagen und Wirkungen in der Praxis“. Hrsg.: Mechtild Stiewe u. Ulrike Reutter; Essen 2012, p. 115-116
- "LEG Stadtentwicklung GmbH & Co. KG (Hrsg): "Mobilitätshandbuch Zukunftsstandort Phoenix West" 2008: Unter:
http://www.mobilitaetsmanagement.nrw.de/cms1/download/mobilitaetshandbuch_phoenix.pdf
(30.4.2014). <http://www.apug.nrw.de/pdf/phoenix-west.pdf>
- http://www.effizient-mobil.de/index.php?id=projekteinzelansicht&no_cache=1&start=1&cHash=00d3e2075f7810c6e065b7ce816f899e&projektId=59&back=208
- http://www.effizient-mobil.de/fileadmin/user_upload/effizient_mobil/Download/Wettbewerb/MobManagement_Dortmund.pdf
- [http://www.dortmund.de/media/p/stadtplanungs_und_bauordnungsamt/stadtplanung_bauordnung_downloads/stadtplanung_1/masterplan_mobilitaet .pdf](http://www.dortmund.de/media/p/stadtplanungs_und_bauordnungsamt/stadtplanung_bauordnung_downloads/stadtplanung_1/masterplan_mobilitaet.pdf)

Mobility concept of the Technical University of Graz following the Push&Pull principles

Country: Graz, Austria

Year(s): 2006 up to 2014

A1 Objectives

- I. Optimisation of mobility of employees, students and deliverers
- II. Establish an environmentally friendly mobility system
- III. Re-use of TU-space – more buildings instead of parking lots and more recreation and communication area for students and employees

A2 Description of the CS

The Technical University of Graz has approximately 2.300 employees and 12.500 students.

The University is located at 3 main places (2 very central) – all of them well accessible by public transport, bicycle and on foot. The public space surrounding of the campus is paid parking area.

In 2006 the TU Graz started to develop a mobility concept which contains of a parking management system and mobility management measures to encourage the use of sustainable mobility modes – the approach was a classical push & pull one.

The Push side: The parking management system contained as a first step a reduction in available parking spaces from 1.340 to 1.100. The criteria for getting a permission to park was the distance to the living place. Those who live less than 1,5 kilometres from the University weren't allowed to park their car at one of University's parking lots any more. Additionally the University introduced parking fees.

- 20 € / month – permit to park but no allocated parking lot
- 15 € / month - permit to park for employees with 20-30 hours employment / week
- 40 € / month - permit to park at a roofed parking space / garage

In a second step the available parking lots were reduced from 1.100 to 740 only by increasing the radius of the exclusion zone to 2,5 km.

The Pull side: To encourage the use of sustainable mobility several measures have been implemented such as

- Financial support for public transport tickets for those who would fulfil the criteria (the ticket has to be shown and then one could receive approx. 50% of the 6-months or annual tickets)

- The TU Graz built hundreds of safe, weather protected bicycle racks at the entrances of the different buildings
- In one week each year employees could bring their bikes to be repaired at the TU location. A service contract with a local bicycle dealer enables employees to receive that service free of charge. Only material has to be paid. The rest is paid by the revenues of parking management. During the rest of the year bikes could be delivered at the repair shop of the bike dealer and substitute bikes are handed over to TU employees for the time when the bike is repaired.
- A business bike model has been developed. Employees can buy a high quality bicycle which is strongly subsidised by the University.
- 700 bikes have been purchased.

Additionally to the mobility concept for employees and students on commuter trips a business trip model has been implemented which has as main objective to carry out business trips between different University locations and other scientific entities by bicycle.

B Costs and who paid them

The development and implementation of the first step of the whole program cost approx. 500.000,- Euro. 30% of the investment costs are funded by the Austrian initiative “klimaaktiv” and similar other ones.

The costs of the pull measures are funded by the revenues of the parking management system. Approximately 170.000,- Euro revenues from parking management are invested every year into sustainable mobility.



*Fig.: High quality TU-Bike with own design.
© Technical University of Graz*

C Project objectives, indicators, data and impact/results

OBJECTIVE	INDICATOR	DATA USED	IMPACT/RESULTS
<i>Reduction of employees commuting by car.</i>	<i>Distance home-work. Parking fees have been implemented</i>	<i>Number of permits to park. Money that has been gained.</i>	<i>The number of people with parking permit has been reduced from 1340 to 740.</i>
<i>Financing sustainable transport measures (pull) through parking revenues</i>	<i>Money from parking fees Spent money on PT-ticket subsidies and on bicycle measures</i>	<i>Receipts and expenditures costs</i>	<i>In total ca. 500.000 Euro have been invested in the first phase. Per year ca. 170.000,- Euro are gained as revenues from parking and invested into the maintenance of the system and into encouraging sustainable transport modes.</i>
<i>Reduction of the negative impacts on the environment</i>	<i>Average car km which were shifted 220 working days</i>	<i>Calculation of shifted km</i>	<i>In total ca. 244 t CO₂ / year was saved</i>

D Implementation process

D1. Stages

The Case Study was implemented, as follows, in the following stages:

Stage 1: 2006 start of the development of a mobility concept with phase one (reduction of parking spaces from 1.340 to 1.100).

Stage 2: By 2013 the 2nd phase was finalised with a further reduction of parking permits to 740 and a building of 880 bicycle racks.

Stage 3: In 2014 another 170 bicycles have been purchased to be forwarded to the employees.

D2 Barriers

When setting up the system – which formed a significant change in the general habits of the University – the fear of opposition and resistance was quite high. Therefore the persons in charge of the system were really astounded that when the scheme was finally implemented a major clash did not and no additional measures needed to be taken.

D3 Drivers

The driving force behind the mobility concept based upon the push & pull principles was the Technical University itself. DI Gerhard Kelz, head of the department of Buildings and Technic took over the responsibility.

For more information (in German only) see:

- http://portal.tugraz.at/portal/page/portal/Files/Services/gut/files/Mobilit%C3%A4tsmanagement%20TU%20Graz_07%202013.pdf

Parking management in Vienna

City, Country: Vienna, Austria

Year(s): Implementation in various steps, mainly 1994 up to 2012

A1 Objectives

The aim of the parking space management system, which was first introduced in 1994, was to lower the traffic in the districts by a reduction in long-term parking and parking space availability and furthermore to improve the parking space situation for residents.

A2 Description of the CS

The increase of motorized individual traffic and the scarcity of parking space in Vienna forced the City to develop a plan for parking space management. The aims were and are to reclaim public space and an improvement of the parking space for residential and short-duration parking as well as urban freight traffic. As a result, more people switch to public transport facilities or bicycles and an improvement of the overall traffic situation and quality of life in terms of better environment can be achieved.

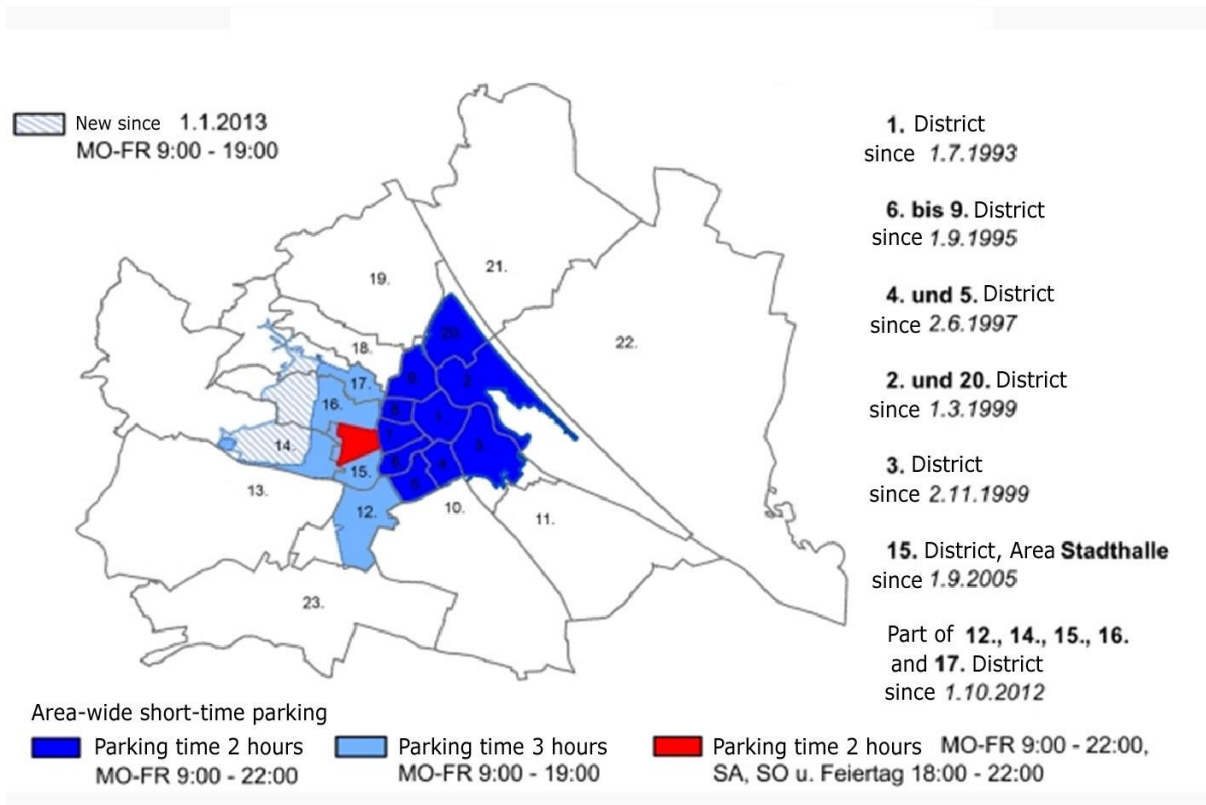
In 1994, Vienna City Council, adopted a "Traffic concept" and in 2003 this was developed further in a "Transport Master Plan Vienna 2003" in order to promote public transport, pedestrian and bicycle traffic and to change modal split (=> modal shift). Parking management is one of the strategies for managing the stationary traffic aside from a garage programme (for promoting the building of collective garages) and the development of Park & Ride systems.

During the work on the traffic concept 1994, a City Commission developed a parking management concept with the terms of operation and exceptions for large short-term parking zones, and a pilot project was started in the form of a short-term parking zone that was implemented across the entire 1st district. The Commission was composed of concerned interest groups, district councils and representatives of business, residents and trade.

The aims of parking management are:

- reduction of car traffic and environmental impact;
- a better situation for both parking and public transport (through the reduction of illegal parking);
- improved accessibility for freight transport and deliveries;
- reclaimed public space and enhanced road safety;
- revenues for the improvement of urban transport; and
- upgrading of the residential environment.

At the core of parking space management in Vienna was the transformation of entire districts or large connected parts thereof into *short-term parking zones*. The area-wide short-term parking now covers the districts 1 to 9, 15, 20 and parts of the 12th, 14th, 16th and 17th district. In the 15th district the area around Stadthalle is subject to special parking regulations. In the short term parking zones there are *restricted parking times and special parking fees*.



source: <http://www.wien.gv.at/verkehr/parken/entwicklung>

B Costs and who paid them

The rates for parking were increased from 1,20 Euro per hour to 2 Euro per hour in 2012 with the effect of a lower demand for short time parking.

Rates for parking

Colour of parking voucher	Parking time	Rate (Euro)
Purple	15 minutes	free of charge
Red	30 minutes	1
Blue	1 hour	2
Green	1.5 hours	3
Yellow	2 hours	4

<http://www.wien.gv.at/english/transportation/parking/parkvoucher.htm>

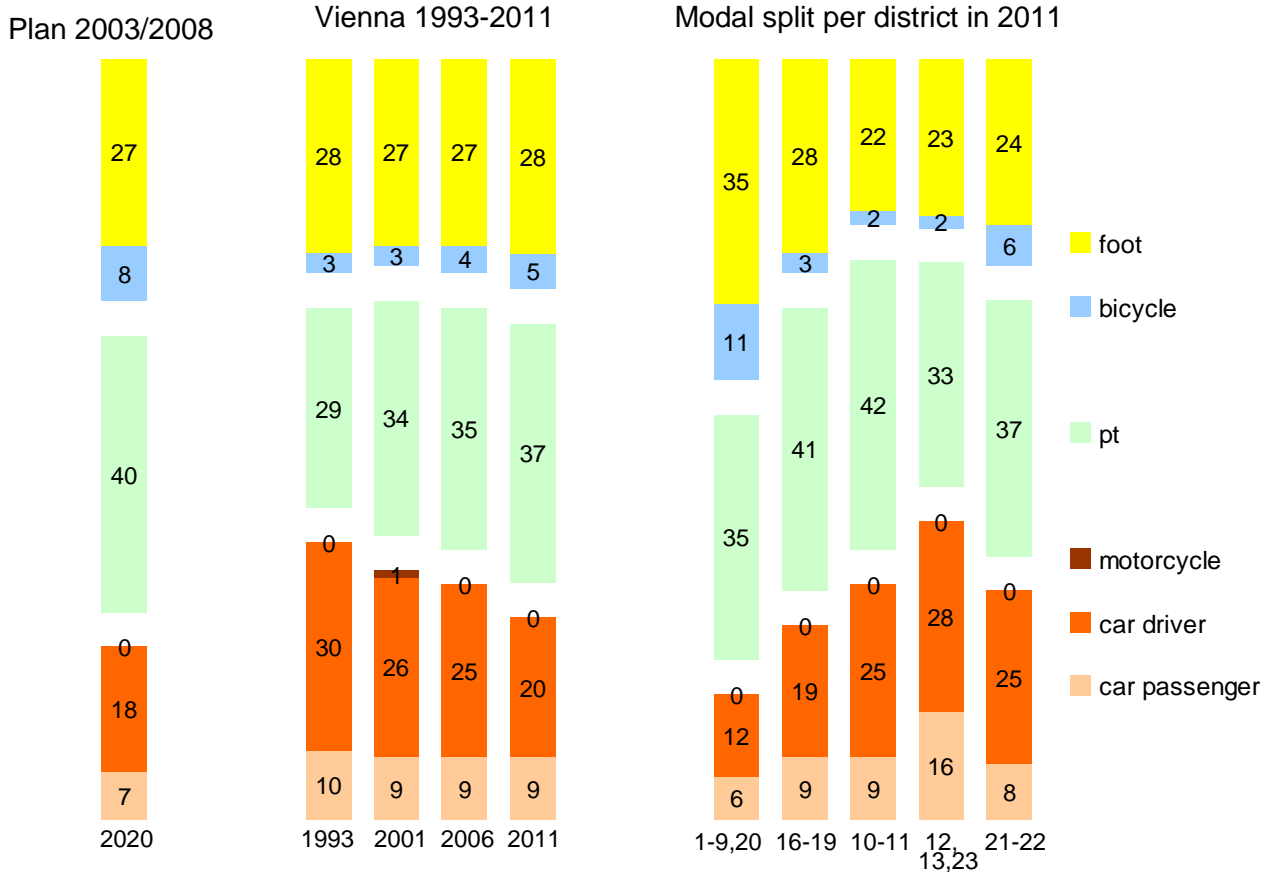
For the residents in the area there are permanent parking permits (Parkpickerl). Applications for resident parking permits ("parking stickers") can be made online or directly from the municipal district office. Companies and firms may apply for a temporary parking permit ("Parkkarte").

C Project objectives, indicators, data and impact/results

OBJECTIVE	INDICATOR	DATA USED	IMPACT/RESULTS
<p><i>lower the traffic in the districts improvement of parking space situation for the residential population improvement of accessibility for freight traffic</i></p>	<p><i>Parking space management: restricted parking times and parking fees</i></p>	<p><i>Evaluation the objectives of Transport Master Plan Vienna in 2013 (modal split, availability of parking space, numbers of illegal parkers, average parking time)</i></p>	<p><i>- In the parking management district 1-9 and 20 the modal split targets for the car traffic are already achieved</i></p> <p><i>very good results for the districts 14 to 19</i></p> <p><i>- situation for residents further improved thanks to an increase in operating hours of parking management in inner districts up to 10pm</i></p> <p><i>- Before introduction of parking management the average parking time within the belt was 6 to 8 hours. Now it is 1 to 2 hours</i></p> <p><i>Reduction in the utilization of parking lots of up to 30% after the introduction of parking management, mainly due to the decline of cars with Non-Vienna-numberplates</i></p> <p><i>In addition, a significant reduction in parking search traffic and the number of illegal parking spaces has declined significantly.</i></p>

Modal Split:

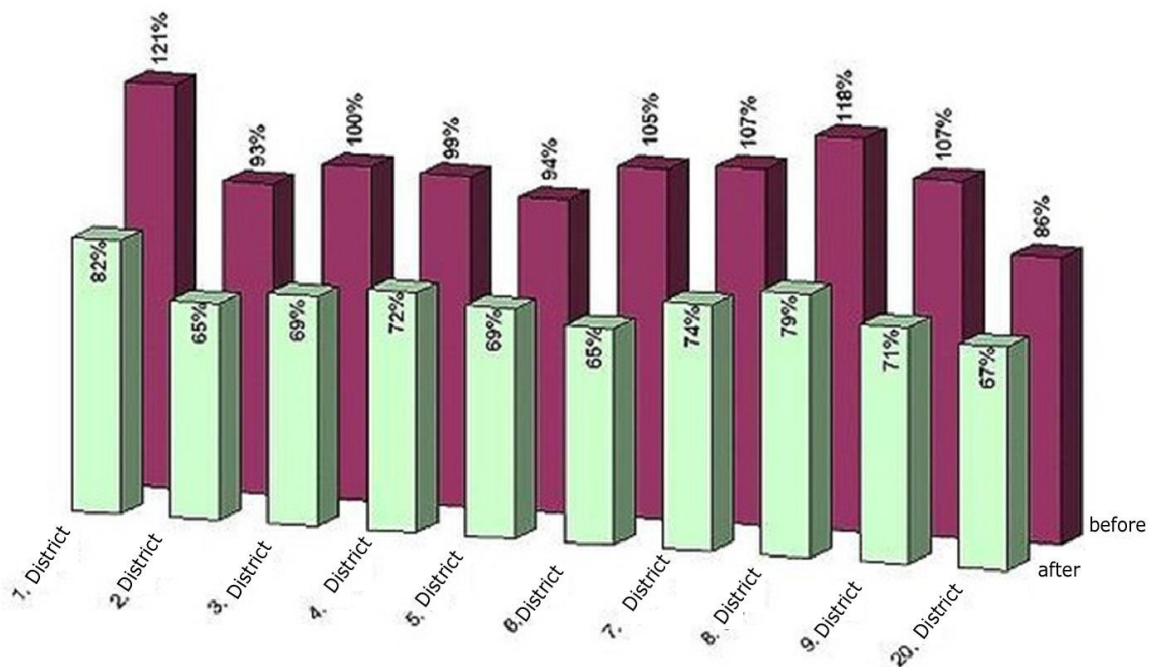
Change in Modal Split



Sources: Socialdata (2007): *Evaluierung Masterplan Verkehr Wien, Bericht mit Zeitreihe 2001–2006*
 omniphon (2012): *Marktforschung für die Wiener Linien: Mobilitätsverhalten 2011. In Masterplan Verkehr Wien 2003 Evaluierung 2013.*

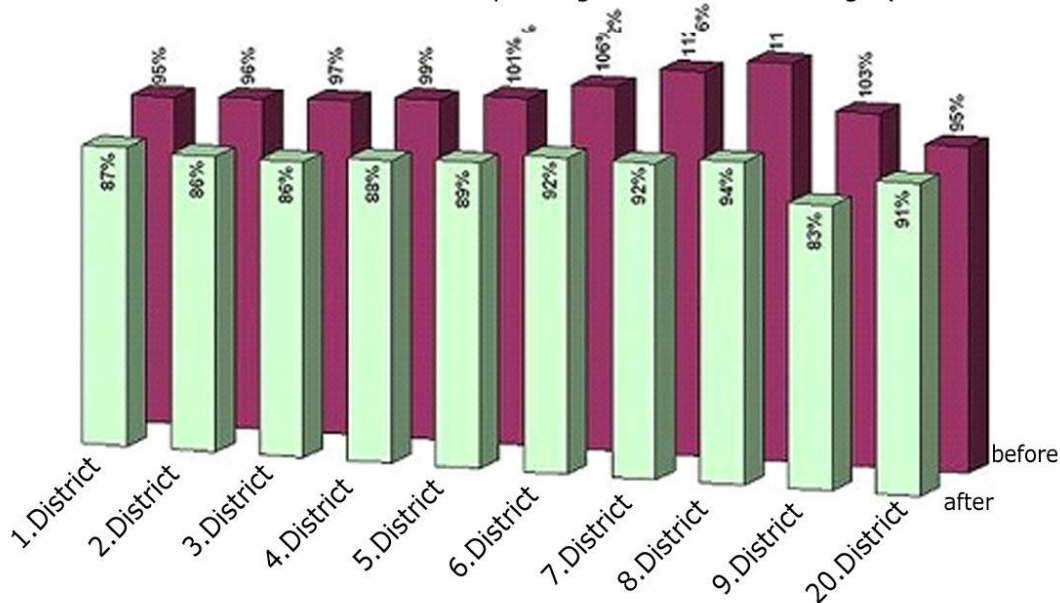
Reduction of illegal parking

Reduction of the "utilization rate" of the parking sites before noon (9:00 – 11:00 am)



source: <http://www.wien.gv.at/verkehr/parken/entwicklung>

Reduction of the "utilization rate" of the parking sites in the evenings (8:00 – 10:00 pm)



source: <http://www.wien.gv.at/verkehr/parken/entwicklung>

D Implementation process

D1. Stages

The CS was implemented, as follows, in the following stages:

Stage 1: 1959: First short-term parking zones in individual streets in the 1st district were introduced

Stage 2: 1975: Paid parking was introduced in these zones

Stage 3: 1993/1994: Pilot project: The short-term parking zone was applied within the entire 1st district (city center) of Vienna in 1993. Before a commission worked out a parking management concept with terms and exceptions for these large-area short-term parking zones. The Commission was composed of concerned interest groups, district councils and representatives of business, residents and trade.

In the following years the system was enhanced to more inner districts.

Stage 4: 2012: The short-term parking zones were enlarged more and more and contain now additionally parts of the district 12, 14, 16 and 17 and furthermore the whole 15th district are included. The area around Stadthalle is subject to special parking regulations.

Latest development: *In continuous steps long-term parking should be shifted from on-street-parking into in garages or private parking spaces in public garages, especially collective housing garages. (Garage Program 2014)*

D2 Barriers

In the 1990s there was a major public debate in Vienna as to whether it should cost something to use public space occupied by parked cars, culminating in a legal decision that found in favour of the City and for charging for parking. Initial opposition from residents was overcome based on rational arguments and also open debates where motorists and residents tried to put themselves in the other's position, to understand the opposing point of view. The City argues that it does not need any special tactics, but rather that it just needs to lay its cards on the table in terms of making public data and facts that are understood by most people.

D3 Drivers

- One of the drivers was that the Vienna Transport Master Plan 2003 which was developed in collaboration with citizens and so there was high acceptance already. In 2013 there was also a Vienna wide survey about the parking management system.
- For managing the stationary traffic also garage programmes (for promoting the building of collective garages) and the development of Park & Ride systems is a driver. The increase in the number of commercial garage spaces between 2002 and 2007 of around 18,000 is significant. Furthermore since 2002, nearly 3,000 park and ride spaces have been built.
- The newly published "STEP 2025 Wien - Fachkonzept Mobilität" emphasizes the positive effects of parking management for Vienna's environment and economy.

Details: what document(s) was (were) used for answering the questions.

- STEP 2025 Wien - Fachkonzept Mobilität - „miteinander mobil“, p.41 – 43 in:
- <http://www.wien.gv.at/stadtentwicklung/strategien/step/step2025/fachkonzepte/mobilitaet/pdf/fachkonzept-mobilitaet-entwurf.pdf>
- http://www.bestpractices.at/main.php?page=vienna/best_practices/housing/parking_space&lang=en
- <http://www.wien.gv.at/english/transportation-urbanplanning/parking-management.html>
- <https://www.wien.gv.at/english/transportation/parking/shortterm.htm>
- <http://www.wien.gv.at/stadtentwicklung/studien/pdf/b008217c.pdf>
- <http://www.wien.gv.at/verkehr/parken/entwicklung/kennzahlen.html>,
- <http://www.wien.gv.at/verkehr/parken/entwicklung/wirkung.html>
- http://www.measures-odyssee-mure.eu/public/mure_pdf/transport/AU7.PDF
- "Transport Masterplan Vienna" in
<http://www.wien.gv.at/stadtentwicklung/shop/broschueren/pdf/mpv2003-kurzfassung-englisch.pdf>
- <http://www.wien.gv.at/verkehr/parken/entwicklung>
- „Masterplan Verkehr 2003.Evaluierung und Fortschreibung 2008“ In:
- <http://www.wien.gv.at/stadtentwicklung/studien/pdf/b008012.pdf>
- „Masterplan Verkehr Wien 2003.Evaluierung 2013“ In:
- <http://www.wien.gv.at/stadtentwicklung/studien/pdf/b008353.pdf>
- <http://derstandard.at/1362107990548/Hinter-dem-Steuer-eine-eigene-Spezies-Mensch>

Zurich parking supply cap

City, Country: Zurich, Switzerland

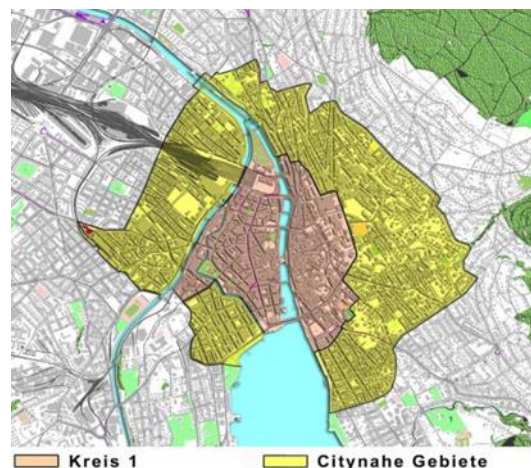
Year(s): Starting in the early 1990ies, Introduction of a new communal traffic plan in 1996

A1 Objectives

The parking supply cap aimed to achieve a balance between the demands for more pedestrianisation and the interests of business to provide enough parking spaces by balancing the creation of additional off-street parking with an equal reduction in on-street parking and usage of these spaces for green spaces, pedestrianisation and bicycle traffic.

A2 Description of the CS

1996, Zürich introduced what is called the “Historical compromise” seeking a balance between the demands for more pedestrianisation and the interests of business to provide enough parking spaces. Since then, every introduction of new off-street parking spaces has to be balanced by taking away on-street parking spaces – this is valid for the inner city as well as a relative large area around the inner city (see adjacent map). The law thus states, that no new parking can be built unless the City agrees to remove an equal number of on-street parking spaces. From 1996 to 2013 about 800 on-street parking spaces have been taken out and upgraded to more urban, liveable and high quality street space, while about 800 publicly accessible off-street parking spaces have been created. At the same time, business in general has thrived.



B Costs and who paid them

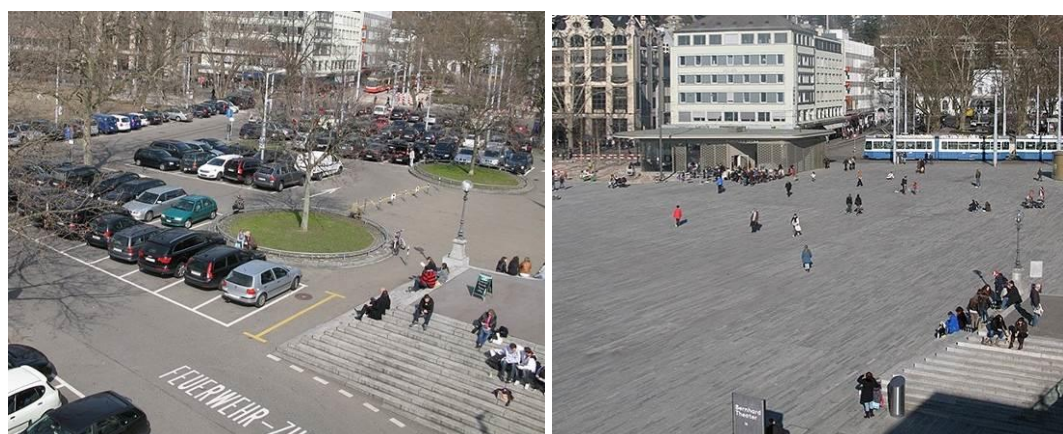
Parking facilities built under public plazas are usually privately operated with the exception of three facilities that are overseen by the city. Private developers get a concession to manage the facilities on public ground. Two large department stores used their own money to build large underground parking spaces.

The city lost some revenue because on-street parking spaces (that you had to pay for) were abolished and off-street parking spaces are mostly private.

C Project objectives, indicators, data and impact/results

OBJECTIVE	INDICATOR	DATA USED	IMPACT/RESULTS (1996-2013)
<i>Maintaining the number of parking spaces</i>	<i>Total number of parking spaces</i>	<i>Count</i>	7622 (1996) 7801 (2013) Balance: +179
<i>Reducing the number of on-street parking spaces</i>	<i>Number of on-street parking spaces</i>	<i>Count</i>	4605 (1996) 3667 (2013) Balance: -938
<i>Creating attractive urban spaces</i>	<i>Transformation of urban spaces</i>	<i>List</i>	<i>The “freed” surface has been used for creating attractive new squares, trees and greenery and additional space for pedestrians and bicycles</i>
<i>Reduction of cruising (park search travel)</i>	<i>Concentration of parking offer in off street parking</i>	<i>Count</i>	3017 (1996) 4134 (2013) Balance: +1117

The slight surplus of parking spaces is mainly there to give urban architects and traffic planners some flexibility with abolishing on-street parking when they want to create new urban spaces. The amount of search traffic is not measured, but it can safely be assumed that the concentration of parking in park-houses substantially reduces search traffic.



Before/after picture from Sechseläutenplatz (source city of Zürich)

Around 2009, 2010 there was a legal dispute whether the counting method by the city was correct: fix reserved parking spaces were not included in the “historical compromise” – as the parking compromise was about temporary visitors, not fixed parkers. But there was a category “freihausparkkarte” which was a sort of monthly ticket – an interest group demanded that these should also be excluded from the counting as these did also not belong to the visitor category. However, a commission concluded that this type of parking mostly just served to fill under used parking spaces in low parts of the season.

Except for this dispute, the historical compromise has held to date (2014).

D Implementation process

The regular counting of parking spaces in the determined zone is a fix part of the 1996 “communal traffic plan” – and the count should include visitor and customer parking spaces (with up to 3 hour maximum parking time on-street) – meaning parking spaces for which visitors have a realistic chance to indeed find a space. Since 2001, the count is done by a private, independent consultancy.

There are two possibilities for a project:

- The city intends to abolish on-street parking spaces
In this case the city has to initiate a project to build additional off-street parking spaces or negotiate the transformation of fixed reserved off-street parking spaces into public accessible parking spaces
- A private party intends to build a parking garage
In this case, the city has to initiate one or several projects to reduce on-street parking spaces in the surroundings (preferably in a radius of 400m – but the distance is not obligatory, the law just states it has to be in the determined zone for the historical compromise)

The city has produced a whole range of urban transformation project plans, which are implemented step by step.

D1. Stages

There were no clear stages, however, there was a process:

1990 a new “Kommunaler Verkehrsplan” – communal traffic plan - became active.

1992 a “Volksinitiative” – people’s initiative – “for more attractive pedestrian zones” was started.

1996 a new communal traffic plan was introduced and the people’s initiative was withdrawn, as the plan contained the historical compromise: more space for pedestrians but also maintenance of the overall number of parking spaces – this within a clearly determined inner zone of the city.

After 1996 that some fine tuning was needed in the counting methods, as this was always a source of dispute, and the city had to make a systematic range of plans for urban transformation.

D2 Barriers

There was a clash of interests: on the one hand, a demand for more pedestrianisation, more green, more cycling – on the other hand the demand from business, not to reduce parking space as this was deemed important for thriving business. It was dissolved through the historical compromise.

Major source of disputes were the determination of the zone and the method of counting the parking spaces – this has to be very clearly and transparently defined – these obstacles did not stop but hindered the process.

The concerned city departments need to have a clear strategy and planning for urban transformation – several options need to be available and good communication is necessary – if this is not available it is a barrier.

D3 Drivers

- The political culture in the city of Zürich and in Switzerland – people's initiatives and votes have a lot of power and have to be taken into account and everybody is used to that – that led to the historical compromise.
- Excellent accessibility of Zürich's centre by public transport – there are good alternatives to the car.
- High level of planning culture in the planning departments of Zürich: due to their good communication skills, good management skills and good urban transformation planning the historical compromise is realised with steady, step-by-step progress.
- The "historical compromise" is embedded in an excellent overall urban and traffic planning strategy – Zürich has detailed parking and traffic concepts not only for the inner zone concerned by this compromise, but also for the outer zone. That made implementation easier.

- *Details: what document(s) was (were) used for answering the questions.*

Fact sheet on the status of the historical compromise in 2013 (in German) – short document mostly showing the most up-to-date numbers:

- https://www.stadt-zuerich.ch/content/dam/stzh/zed/Deutsch/taz/Mobilitaet/Publikationen_und_Broschueren/Parkierung/14_03_06_GesamtFaktenblatt_HistKomp2013.pdf

Explanation and implementation of the historical compromise (2009) (in German)
Contains many before after pictures.

- https://www.stadt-zuerich.ch/content/dam/stzh/zed/Deutsch/taz/Mobilitaet/Publikationen_und_Broschueren/Parkierung/Bericht_WEB_Der%20Historische%20Kompromiss.pdf

Europe's Parking U-Turn: From Accommodation to Regulation, ITDP-report 2011, Michael Kodransky and Gabrielle Hermann, on pages 68-72 – overview over Zürichs' parking policy – good to understand the wider context.

- <https://go.itdp.org/display/live/Europe%27s+Parking+U-Turn%3A+From+Accommodation+to+Regulation>

Webpage of the city of Zürich with the historical compromise: providing links to further documentation, especially on the legal disputes (all in German) and also some before/after pictures as well as the actual numbers of parking places.

- https://www.stadt-zuerich.ch/ted/de/index/taz/mobilitaet/autoverkehr_parkierung/historischer_parkplatzkompromiss.html

“Fahrtenmodell” Trip Contingent Model for Parking Standards Policy

City, Country: Zurich, Switzerland

Year(s): 1999 up to 2012

A1 Objectives

The City Canton of Zurich adapted its own flexible parking regulation in order to avoid non-efficient use of urban space and traffic generation of a new urban development that would be incompatible with, for example, neighbouring housing areas. The mechanism was first used mainly to save money for investors where a high parking demand is not expected in urban areas.

A2 Description of the CS

The City Canton of Zurich adapted its own flexible parking regulation in order to avoid non-efficient use of urban space and traffic generation of a new urban development that would be incompatible with, for example, neighbouring housing areas. The mechanism was first used mainly to save money for investors where a high parking demand is not expected in urban areas.

A specific regulation, combined with monitoring and the obligation for mobility management measures was developed that responds to the specific location. In these cases the issue of traffic generation annoying the housing neighbourhood directly was the main motive.

The Fahrtenmodell (trip contingent model) is a tool to have a better planning of the traffic generation from highly frequented sites and to use the parking space in a more efficient way. The Fahrtenmodell regulation allows a more flexible private parking management, compared to parking standards and parking limits (minimum or maximum numbers of parking spaces to provide) in the building legislation. The model calculates the traffic generation of short term and long term parking dependent on the land use at the location, and defines a threshold of allowed traffic generation from this. In the case that this permitted traffic volume is exceeded, measured by monitoring, mobility management measures become mandatory for the operator of the garage to get the trip generation back to the assigned traffic volume.

B Costs and who paid them

By managing the traffic/parking volumes in a specific way to the location and conditions the measure is more targeted and accurate for the purpose.

- Main effect: budget savings by providing not more parking than necessary / compatible to the local environment.
- Compared to other infrastructure measures the mobility management measures are less costly.

- Monitoring shows that the traffic generated normally does not exceeding the level permitted. Monitoring costs are low from local survey or even lower by analyses of the data of barrier organized parking.

C Project objectives, indicators, data and impact/results

Example Sihlcity

Best known example is Sihlcity, a shopping centre on a former factory site not far from the inner-city of Zurich and with excellent access by tram and regional rail. Neighbouring housing areas that would have complained about the project (with good chance to succeed in the Swiss direct democracy) were convinced that the new traffic generation would be very low by the regulation’s mechanisms. This limit had a major influence on the high price per hour for parking in the remaining parking facilities. New public transport stops funded by the city encouraged the developer to accept the “low car traffic generation” approach that was contrary to the overall shopping centre policies elsewhere.

There are 850 parking lots offered (50 park and ride spaces and two Car sharing locations included), and charged parking is obligatory. In consequence the employees of shops in Sihlcity do not have parking allowance. The maximum car trip contingent is 8,800 trips / day (to be achieved within 5 years, starting from 10,000 trips / day in 2007). Further specific thresholds are 1,300 trips / night and 800 trips / peak hour. The Sihlcity offers 41,000 m² rentable space for shopping, additional space for cinema, services, fitness etc.. Visitors were counted at 19,000 per day, whilst 2,300 persons are working there. There was a volume of investment of 600 Mio €. Already in 2002 Sihlcity was regulated by contract. Part of the building permission were complementing parking regulations: e.g. 600 bike parking spaces and financial contribution to public transport improvements. Tram line no. 5 extension to Sihlcity was financed for the first two years from 2007 by Sihlcity, and afterwards by the public transport company

OBJECTIVE	INDICATOR	DATA USED	IMPACT/RESULTS
<i>Reducing the amount of (parked cars, therefore traffic generating) cars by building permit regulation for the Sihlcity development</i>	<i>Car parking was not fully occupied during the week (only on Saturdays full occupied). Traffic generation was approximately 3,600 trips per day (8,800 trips by car per day are allowed).</i>	<i>The barriers at the garage entrances are counting cars steadily anyway. Very cheap to monitor by an consultancy biannually.</i>	<i>. Only 28% use the car the shoppers frequency (19,000 visitors per day) were stable</i>

D Implementation process

D1. Stages

In 1999 the “Fahrtenmodell” (trip contingent model) was adapted first as an unique exception for the enlargement of the ETH University in Zurich. The higher density of buildings meant significant additional construction costs for parking according to the legal parking standards at that time. Due to the fact that the university has a high share of non-car based access anyway and of being a public institution the denser institute buildings got construction permits without additional parking.

The second case was in the brownfield development Neu-Oerlikon for retail and business, where a limitation of 5,000 car trips /day traffic generation was fixed for a block. This was result from an Environment Impact Assessment (EIA) for the entire area.

The regulation was practiced by the city administration more often from 2002 to 2012 in several cases of highly traffic generating land use. It was integrated part of the building permit procedures. The investors and developers applying for a building permit are asked to reflect their policy and management on parking capacity in order to get a more efficient and sustainable urban development.

D2 Barriers

Barrier: Business community feeling restricted in their strategies to offer maximum parking capacity to keep all options in future, this led to confrontation in the city council. The main objection to this “push measure” came from the shopping retailers and developers community who expected long term disadvantages from non-build parking volumes. In another case (combined stadium / shopping mall) the investor stepped out of the project for other reasons. But the image of projects failing because of restraint based parking standards was discussed in the business community.

Direct public reaction on the Trip Contingent Model was rare, the matter more an expert issue. It was supported by the transport & environment consumers association VCS (Verkehrsclub der Schweiz) who helped to disseminated the model to other regions in Switzerland. Nevertheless the general interrelation of traffic and environment / climate change mitigation action, made dynamic by parking policy, is in public discussion, due to the right of the citizens to influence the strategy to a large extend by referendum. (SEE OTHER ZURICH CASE ON PARKING POLICY IN GENERAL).

Basically the model is a legally allowed planning instrument, according to the cantonal legislation. It is not explicitly incorporated in the parking legislation as a rule yet, therefore penalties are not easy to implement, however it worked in practice without a case for penalty. In advance during the planning phase the model showed its power and was challenged legally. But the judiciary clarified the situation in a critical case on a shopping location in favour of the model. The judgement confirmed the right of the City of Zurich to introduce such a regulation in the public interest.

A key supportive factor was a general restrictive parking policy in the city canton of Zurich, which was a kind of door opener for acceptance of the specific moderate regulation. The regulatory frame works in this sense well as the threshold was never exceeded up to now in the monitoring. This means that the parking management at low level of parking facilities achieved the goal to limit the traffic generation to a level that was tolerable before.

D3 Drivers

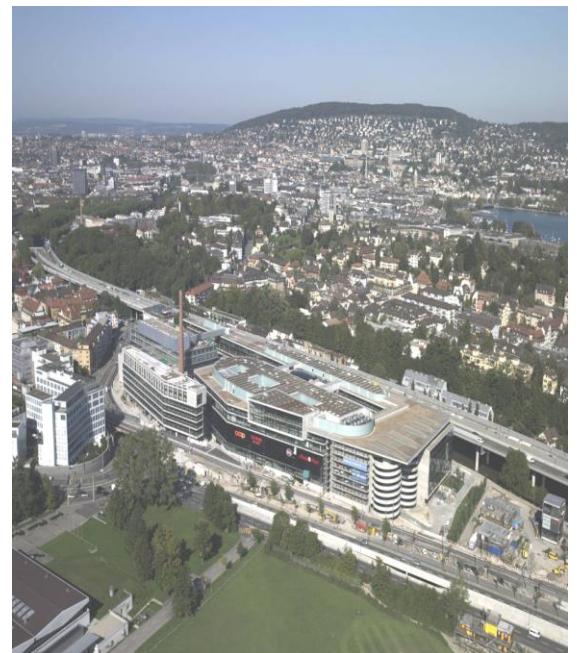
Driver 1: Long term orientation of administration in the Zurich city government to integrate transport planning and urban development for sustainable development (environmental policy) reasons:

Key supportive factor was a general restrictive parking policy in the city canton of Zurich, that was a kind of door opener for acceptance of the specific moderate regulation. Main objection on this “push measure” came from the shopping retailers and developers community expecting long term disadvantages from non-build parking volumes.

Driver 2: The Zurich urban society, non-regarding the specific Fahrtenmodell cases, after long time of “historic parking compromise” in Zurich, were confirming a new parking policy by referendum and urging on climate change mitigation action. Recently therefore the model’s practice was substituted by a less flexible.

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Sihlcity (source: City of Zurich)

Sihlicity in comparison with an car-oriented shopping centre in Zurich

Table 1. Two shopping centers in confrontation: facts and figures about two shopping facilities of Zurich (IBV)

	Glattentrum Zürich Nord (1975)	Sihlicity Zürich Sud (2007)
Surfaces of shops etc.	43,400 m ²	65,600 m ²
No. of shops	96	80
No. of restaurants	9	13
No. of cinemas	0	10
No. of employees	1,250	1,300
No. of visitors/year	8.1 Mio	6.0 Mio (estimated)
No. of parking lots	4,750	850
No. of car trips/day	26,000 (13,000+13,000)	8,800 (4,400 + 4,400) trip limit
Modal split car	83%	40% est. 28% (1 st 100 days)
Supply public transport	3 bus lines (middle-low frequency)	2 tram lines (high freq.) 1 bus line 1 Commuter train stop
Motorway supply	Direct	Near by

Sihlicity compared to car oriented other shopping centre in Zurich (source: Hüsler / Urbani 2009)

Extension of controlled on-street parking in Edinburgh - impacts in one sub-area

City, Country: Edinburgh, UK (Scotland)

Year(s): Outline scheme design in 2005, operations from 2007 onwards

A1 Objectives

The City of Edinburgh Council's stated objectives for expanding its on-street parking controls (called a Controlled (Parking) Zone, C(P)Z) were to reduce parking-related congestion, make parking easier for shoppers, enable residents to park near their homes, discourage parking for long periods by drivers from outside the local area, keep traffic moving, ensure access for emergency vehicles, and improve road safety.

A2 Description of the CS

Edinburgh is the capital of Scotland in the UK and is a city of around 460,000 people in a region of around 1,000,000 people. Its first on-street parking controls were introduced in 1974 and covered the city centre and the very most inner suburbs around – at the most, the controls extended 1.5 km from the centre. These controls required residents to hold a permit to park on street during controlled hours, and charged visitors by the hour to park, with maximum duration of stay of between 1 and 4 hours depending on location. Residents could park for as long as they wished. Most controls applied only from 0830 to 1830 Monday to Saturday in the very city centre, and 0830 to 1730 Monday to Friday in the slightly more peripheral controlled area. Outside these times there was no payment or permit required to park. Increasing pressure on residential parking by commuters raised the political importance of parking so that by the mid 2000s, the Council was forced to expand the CPZ into more residential areas further from the city centre. Some 16 new zones were introduced in 2006 and 2007, such that at its furthest the new CPZ extended 3km from the city centre. The number of controlled spaces in the extended CPZ is unknown, but in the old CPZ it was 5,740; the relative sizes of the old and extended CPZs suggests that there are at least as many spaces in the extended area.

This CS refers to a study of a very small part of the extended CPZ, in the wealthy Merchiston area in the southwest of Edinburgh, about 2.5km from the city centre. The main employer and traffic generator in the area is Edinburgh Napier University and many of its staff parked free on street in the Merchiston area, before controls were introduced. The new controls limited the maximum stay to 4 hours and levied a charge of 70 pence (about €1.10) per hour. Previously there was no charge and no maximum stay. Residents were to pay around €100 per year for a parking permit with a maximum of two permits per household. Impacts of the scheme on occupancy of streets within and just outside the new CPZ can be seen below, the photo on the left is a street just outside, whilst the photo on the right is a street just within the zone. (Pictures by William Mykura.)



B Costs and who paid them

This project was an extension to an existing CPZ and therefore the costs were composed of paint and signs for road markings, ticket machines and the staff costs of preparing, consulting on and finalising the legal definitions of the CPZ. The additional operating costs were enforcement staff and staff time to empty and maintain the ticket machines. Since the parking operation was already live, covering other areas of the city, there was no need for the major investment of setting up the “back-office” operation needed to administer and run a CPZ – ticket and permit issuing, handling money and card payments, administering fines, and managing appeals against fines. The precise costs of the CPZ extension in the area covered by this CPZ are not known.

Below, however, are some indicative costs from a CPZ in another British city (not Edinburgh) with about 100km of on-street parking regulations, although only 1,000 controlled parking spaces. Its operation was estimated to require 8 enforcement staff and two back office staff, and from nothing, was forecast to require the following investment costs:

Amend TROs ³ & Upgrade signs & Lines to comply with regulations	£55,268
On-Street. Hand held ticket processing hardware & uniforms	£16,962
Off-Street. Hand held ticket processing hardware & uniforms	£3,581
Ticket Processing -Accommodation, Office set up hard/software	£35,179
Publicity & Consultancy Advice	£23,934
Stationery, Telephone, Training, Web-site & Cash processing	£19,413
TOTAL	£154,337

C Project objectives, indicators, data and impact/results

In spite of the large number of stated objectives for the CPZ, no data were collected by the City Council (municipality) to measure whether or not the objectives had been achieved. However, in the context of a study carried out by the university located in the new CPZ, some occupancy and turnover data were collected in the before situation, and then a few weeks after implementation, in February and March 2007.

OBJECTIVE	INDICATOR	DATA USED	IMPACT/RESULTS
<i>Reducing cars parked for long periods of time</i>	<i>Length of stay</i>	<i>Before and after number plate and permit survey</i>	<i>Proportion of cars parked for more than 4 hours fell from 22% to 10%</i>
<i>Reducing proportion of long term parkers from outside area</i>	<i>Proportion of parkers who are residents; occupancy</i>		<i>Large majority of parkers in after situation were residents</i>
<i>Making it easier for residents to park</i>	<i>Occupancy</i>		<i>Occupancy on 3 of 4 streets surveyed fell by 40-50% after controls introduced. Occupancy on uncontrolled streets just outside the new controlled area doubled.</i>
<i>Reducing parking related congestion</i>	<i>Occupancy</i>		

The period of the evaluation was very short so framework conditions were unlikely to have had much impact. In the longer term, factors such as the increasing proportion of no-car households in Edinburgh, increasing levels of walking and cycling and fuel costs rising faster than inflation will have had an effect on parking demand over and above the impact of the new parking controls.

D Implementation process

The CS was implemented, as follows, in the following stages:

- Stage 1:** Outline scheme design and informal public consultation. January to July 2005. Carried out by City of Edinburgh Council and its consultants; general public involved in public meetings, responding to questionnaires etc.
- Stage 2:** Detailed scheme design, preparation of Traffic Regulation Orders (TROs - legal definition of CPZ) – September 2005 to February 2006. Carried out by City of Edinburgh Council and its consultants
- Stage 3:** Formal legal consultation on the TROs. March to April 2006. Carried out by City of Edinburgh Council and its consultants, general public involved in submitting formal objections to the scheme.

Stage 4: Modification of scheme in light of objections; approval by Council of final orders.
May to September 2006.

Stage 5: Procurement and appointment of contractors and implementation of scheme.
September to December 2006.

Stage 6: CPZ starts operating, 8 January 2007.

D2 Barriers

As with any CPZ scheme, the main barrier was public opposition, but this was managed through careful scheme design and public consultation.

D3 Drivers

The main driver for the scheme was political support resulting from pressure from residents for parking controls. Politicians were more likely to support requests from residents for parking controls than to listen to objections from commuters, some of whom come from outside Edinburgh. The fact that parking controls had been implemented previously in the city without detrimental effects on local shopkeepers also helped.

This case study is based on research carried out by William Mykura whilst he was employed as a lecturer at Edinburgh Napier University. The information is reproduced here with his permission. There is no other documentation on which the CS was based.

Parking management in Graz

Country: Austria

City: Graz

A1 Objectives

- Modal shift of commuter traffic towards public transport;
- Use freed-up parking space for pedestrians, cyclists and public transport;
- Ensure the 'multiple use' of parking spaces for shopping and business traffic.

A2 Description of the CS

The concept "Space for people" is an overall and integrated strategy to improve the living conditions in the city of Graz, via the implementation of coordinated transport measures. Those measures relevant to this case study are summarised below:

- In the heart of the historical old city a pedestrian area was established, with cyclists only having limited access;
- With a few exceptions, no short-term parking is allowed within the 'inner city area, although, short-term parking is allowed at the inner city outskirts;
- The monitoring and enforcement of short-term parking was devolved to a private company.

The revenue earned from parking tickets / fines (although, reduced by the costs of monitoring) is earmarked to support the expansion and improvement of the quality of public transport. These improvements are primarily in relation to service frequencies, as well as mobility management measures (e.g. mobility consultants) and improving passenger waiting conditions (stops expansion / canopy / passenger information).

In parallel, as a result of the actions mentioned above, there were also significant investments for improving the system by establishing a comprehensive system of parking ticket machines.

Revenue generated

In 2014, the City of Graz generated €24.8 million via parking-space management. €18.6 million were taken from charges, the rest from penalties. Taking into account costs for monitoring, staff and maintenance of the parking machines, around € 3.8 million remained and was used for traffic measures such as Park & Ride, mobility checks or more frequent and extended bus traffic.

Parking garages:

Simultaneously to the introduction of the short-term parking area around the old town area, the construction of (underground) parking garages were implemented. With the opening of these parking garage, a reduction of surface parking lots was realised.

B Costs and who paid them

As the development of Graz’s parking strategy was not really a case study - rather a long-term adaptation, it is difficult to estimate the total costs involved. Further, many of the improvements that have resulted, were partly co-financed by the measure on EU projects such as CITIVAS Trendsetters.

C Project objectives, indicators, data and impact/results

OBJECTIVE	INDICATOR	DATA USED	IMPACT/RESULTS
<p><i>Long-term parking in the city centre on public property – 17,000 spaces</i></p> <p><i>Reduction of surface parking lots in and around the city centre. Abolition of the permanent parking lots in the historic city centre -From 2,000 to 0.</i></p> <p><i>Short-term parking from 1,700 to 2,000 spaces and temporary loading lots from 800 to 1,500</i></p>	<p><i>Parking fees for everyone: Special arrangements for residents in the direct living environment and for economic operators</i></p>	<p><i>Number of parking spaces before and after implementation of measures</i></p>	<p><i>Reduction of surface parking lots; establishment of a pedestrian area and the improvement of the public transport</i></p>

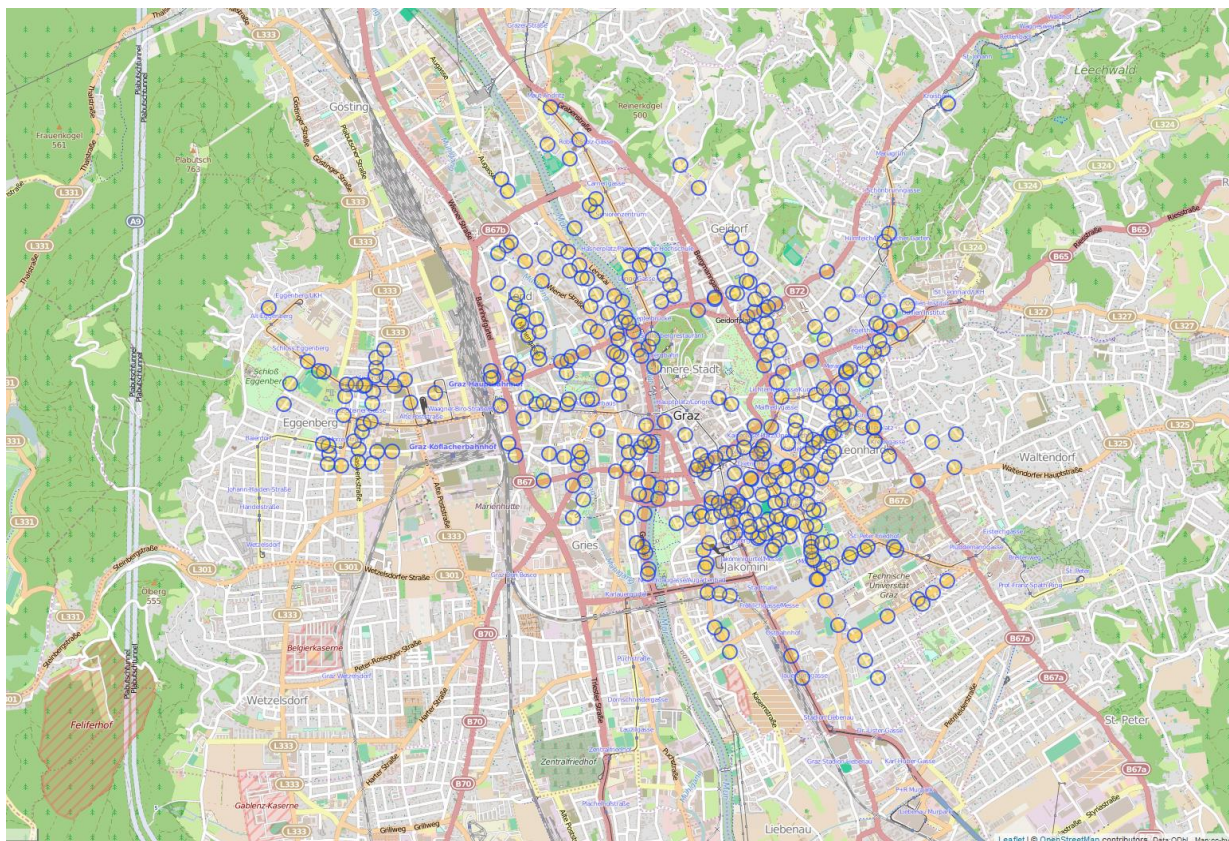
Were there any major changes in framework conditions (e.g. local economy, politics) during the implementation period that may have affected the impacts of the CS?

- General change of City politics with the programme “Space for people” and “Gentle Mobility”;
- Influence of local law (short term parking – province of Styria) and General speed Limit in City 30/50 regulation (30 km/h zone in a whole city area – national law);
- City internal opinion-forming process in 1992-1995 “GIVE” (Grazer integrierte Verkehrsentwicklung); Decided by the council of Graz in December 1995.

D Implementation process

General background about organisation of parking control system:

- Since 1979, there were short-term parking zones in Graz, which were monitored by the police;
- In 1991, the monitoring role was transferred to a private company which led to a fivefold increase in revenue. This was part of the project “Place for people”;
- In 1993 the first 300 ticket machines were introduced, in addition to pre-sale permits.
- Since 1998, the machines were set up nationwide;
- In 2000, old machines were replaced with new ones;
- From the beginning of 2002 (Euro changeover), only machines were in use; paper parking tickets no longer existed;
- In 2015, within a distance of 50m (from the business district) and 100m (from residential areas) of each parking area (blue or green zone) ticketing machines have been installed.



Picture 1 Vending machines in Graz (Source: Open Source Map, 2015)

D1. Stages

The CS was implemented, as follows:

- **Trend-Setting Decisions on Traffic Policies from 1977 to 1985** / Decision on the principles of traffic policy;
- **Integrated Traffic Concept for Graz 1987** / Guidelines on traffic policy and general program of measures;
- **VÜP 1988 to 1991 Solutions Across Various Means of Transport for Graz-East** / Decision for the alternative “Tram and Bus Concept” corresponding to the guideline “Gentle Mobility”;
- **Integrated Traffic Concept 1992** / Continuation of the integrated Traffic Concept for Graz 1987;
- **Guideline 2000 on Traffic Policy** / Resolution of December 1992 – “Gentle Mobility”;
- **Integrated Traffic Concept – General Program of Measures; The “GIVE” Concept – Graz Integrated Traffic Development (Grazer Integrierte Verkehrs Entwicklung)**;
- **Tramway-Expansion-Program** / December 2003.

D2 Barriers

- **Lack of awareness of the use of public space for everyone:** Awareness campaigns, such as ‘Car free days’, brochures, media campaigns, etc. The focus was on the one hand the integrated approach, but on the other hand the model ‘Tempo 30’ throughout the city, with exception of the main roads;
- **Lack of acceptance amongst shop owners:** Shop owners argued that parking was required for customers. In fact, the parking lots were used by the owners themselves or by employees;
- **Too long distances to the old town of Graz (which is also the business centre):** Support and initiation of the construction of parking garages with private investors, by providing the building ground for a symbolic price. Furthermore the additional costs for a high-quality surface design will be taken by the city. Approved times for loading between 05:00 and 10:00, un-bureaucratically control of 10 minutes waiting, which is generally allowed without labelling.

D3 Drivers

- High personal commitment of competent politicians;
- Planning and implementation of measures in a political responsibility way;
- Fixing the integrated approach and the ideas with the help of local council decisions
- Parts of an integrated concept (“Place for people” and “Soft Mobility”);
- Communicating the idea of using the “surplus” of the parking management to provide a better public transport;
- Promotion of the significance of the historical old town – this has led to the admission as a UNESCO World Heritage Site in 1999;

- Construction of underground car parking garages around the historical old town;
- Visible and tangible improvement of public transport, or later on as a construction of the Park & Ride facilities.

Details: what document(s) was (were) used for answering the questions.

- **Final Policy Report of CIVITAS Trendsetter**
http://www.civitas.eu/sites/default/files/Results%20and%20Publications/CIVITAS_TRENDSSETTER_Final_Policy_Report.pdf
- **Brochure “Gentle Mobility**
http://www.graz.at/cms/dokumente/10151122_3394949/e05ab676/brochure_gentle_mobility.pdf
Homepage City of Graz: www.graz.at
- **Parking:** www.parken.graz.at / www.garz.at/parken

On-street parking Enforcement with digital parking permits

City, Country: Utrecht , the Netherlands

Year(s): Implementation process 2009 -2013

A1 Objectives

The main objective of this measure was to improve the overall efficiency of the city's parking policy through:

- An increase in the “payment rate” for short term parking;
- A reduction in enforcement costs (i.e. less wardens and less staff for the front desk office);
- The collection of data that could be used to better analyse the effects of parking policy and to help the (political) decision making process.

A2 Description of the CS

In 2009 the city of Utrecht decided to introduce a new parking system based on the “digitalization” of the parking product. In short all paper based document related to parking – i.e. the parking ticket for short stay parking, the parking permit for residents and the visitors parking permit for residents – were digitalized. For visitors the classical park and display system (i.e. you pay and display the ticket in the car) has been replaced with a system where the motorist must simply enter the digits of the number plate of their car in the ticketing machine and pay. There is no need to go back to the car. At any time the system knows which car has paid and, accordingly, has “the right” to park. The enforcement takes place with a number of so called “scan-cars”: these are cars equipped with several cameras that record all number plates of the cars parked on-street. The recorded number plates are then checked with a central database where all information about the payments for on-street parking and residents permits is contained. Also all forms of residential parking permits have been digitalized; residents don't need to display a card in their car but simply register their number plate.

Within this measure 530 digital parking ticket machines have been installed and a large information campaign was implemented. Additionally also mobile phone parking was introduced – i.e. the possibility to pay for short stay parking through your mobile phone.

The main advantages of the system are: more efficient enforcement; reduction in fraud; an increased payment ratio; a decrease in the number of visitors to the physical parking desk; and the generation of parking data.



Figure 1: the scan-car; Left: the side of the scan car with cameras behind the mirrored glass. Middle: camera system inside the car. Right: the computer display showing information on the scanned license plates.



Figure 2: the digital parking ticketing machine

B Costs and who paid them

The implementation of the new parking system in the city of Utrecht was partially co-financed by the CIVITAS – MIMOSA project (EU-funded). The whole system is still in place after the completion of the project and it has been enlarged to other areas of the city.

C Project objectives, indicators, data and impact/results

OBJECTIVE	INDICATOR	DATA USED	IMPACT/RESULTS
<i>Increase the "payment rate" for short term parking</i>	<i>The payment rate (i.e. the percentage of motorist actually paying for parking)</i>	<i>All data come from the Parking Management System of the city</i>	<i>The payment rate increased 10% in the period 2010-2012 (from 68% to 78%)</i>
<i>Reduce the enforcement costs</i>	<i>Number of wardens used for the enforcement</i>		<i>The number of enforcement officers decreased from 63 in 2008 to 45 in 2012</i>
<i>Reduce the enforcement costs</i>	<i>Number of visitors to the parking desk per year</i>		<i>The number of visitors to the parking desk decreased 35% in the period 2008 (before the new system) and 2011. From 28,409 to 18,260 visitors per year. The workload of the parking desk staff decreased considerably and payroll was decreased by 1 Fte.</i>
<i>Collection of data</i>	<i>General data collection</i>		<i>Data are now used during the decision making process for new policy</i>

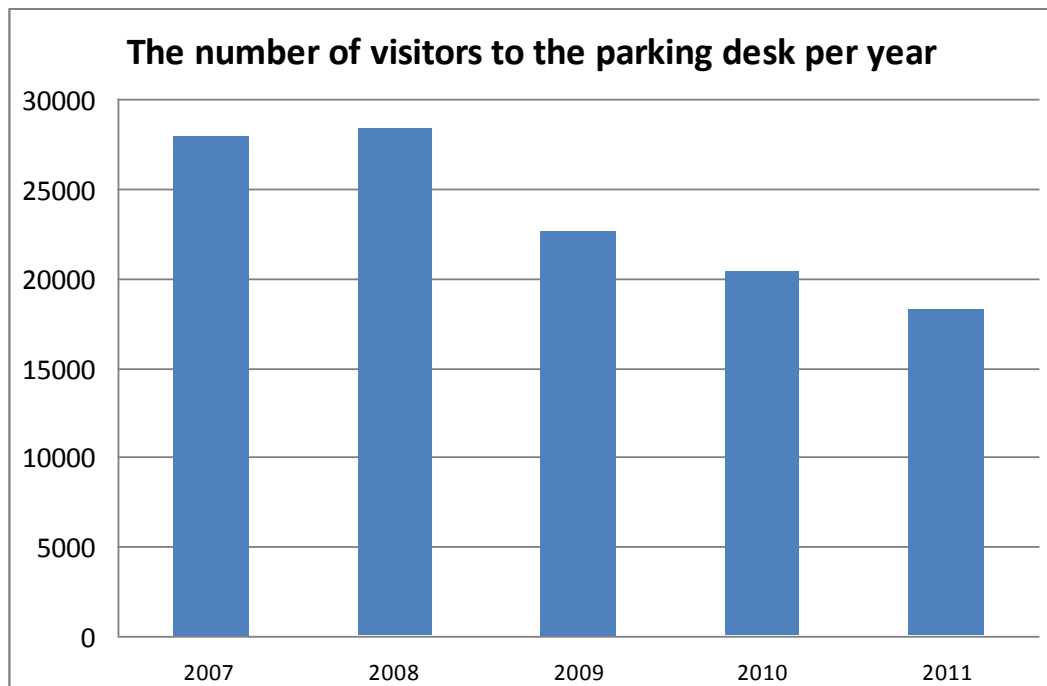


Figure 3: The number of visitors to the parking desk per year (department of parking)

D Implementation process

D1. Stages

The CS was implemented, as follows, in the following stages:

Stage 1: Installation of new parking ticketing machines (2009-2013)

In the period 2009-2013 approximately 700 new ticketing machines were installed in the city centre: 70 in 2009; 300 in 2010, 180 in 2011 and 150 in 2013.

Stage 2: Introduction of the digital parking permit and a personal web page (2009-2010)

An important stage in the implementation of this CS was the replacement of the plastic parking permit for residents – i.e. a card that must be displayed in the car - with the digital parking permit.

Since October 2010 parking permit holders have online access to a personal web page to monitor their parking credit and payment status. They can use a secure code to find the digital forms needed to apply for a permit, see the status and validity of their own permit, order visitor's tickets, find phone numbers or ask questions.

Stage 3: Communication campaign on digital parking (February- May 2009)

In the period February – May 2009 an intensive communication campaign took place, called "Digitaal parkeren doe je zo" ("digital parking – this is how you do it" in English). The new parking machines, the digital visitors' passes and the digital parking permit for residents were communicated to visitors, inhabitants and companies in Utrecht, as well as employees at the city administration and the politicians.

The aim of the communication was twofold. On the one hand it was meant to inform citizens and visitors about the change, and to highlight the benefits of digital parking. On the other hand, it was meant to generate internal support within the local authority.



Figure 4: An example of advertisement in the press.

Stage 4: Introduction of the digital visitor permit (2009)

This product gives the possibility to residents of the city to allow their visitors to park for a reduced fee (50% off) in the centre. This product was based on a plastic card technology – i.e. the residents could give the card to their visitors and they had to use it to get a parking ticket to be displayed in the car. Thanks to the digitalization of the system residents or their visitors have simply to enter a code in the ticketing machine and automatically they are charged the reduced fee.

Stage 5: Purchase of a scan-car (2010)

A special scan car, equipped with license plate readers, that enforces the digital parking permit was put into operation in December 2010. The car drives through the streets and 'reads' the license plates of parked cars. The scan car recognises the license plates that are in the central digital parking database; cars that have been paid for are registered in this database. Cars that are not in there are checked by enforcement personnel on scooters and

on foot. When a parked car is confirmed to have no right to park there, the owner receives a so-called after parking-tax assessment (an additional assessment for unpaid parking fees which has to be paid within 30 days - the tariffs in 2012 are € 54.00 plus the parking tariff due for one hour of parking; this tariff covers the costs and does not result in a profit).

Stage 6: Removal of the obligation to enter license plate number (2012)

Digital short term parking was technically possible since the beginning but for political reasons (mainly privacy) it was decided that visitors still needed to be able to park anonymously in the case of short term parking. For this reason in September 2011 the city council decided that visitors could not be obligated to enter the license plate of their car when they wanted to park. Accordingly parking machines were adjusted in March 2012.

The local authority developed a variety of new products – among others mobile parking (see stage 7) – for which visitors entered their license plate number voluntarily. In this case they were informed beforehand what the license plate number would be used for.

Stage 7: Introduction of Mobile Parking (2012)

In March 2012 paying for parking by mobile phone was introduced. All phone providers can be part of this. Payment takes place via a separate mobile parking provider. The tariffs are the same as paying via the parking machine; the benefit for users is that it is easy to use. Visitors pay by calling, sms, mobile internet or a special smart phone-app when they park their car. Payment takes place after an agreed period, mostly every month or two weeks. Participants need to enter their license plate number for this.

D2 Barriers

Barrier 1: the legal framework – In case of mobile phone parking, some legal issues had to be overcome (e.g. permission to use the telephone bill for purposes other than to charge for phone-costs). As a result it took more time to implement this. Furthermore the market share increased slowly because people needed to apply themselves to a provider of mobile phone parking before they could use it. Nowadays mobile parking is a large success.

Barrier 2: new developments must be accepted by all parties - Due to the innovative nature of the system, it took more time to prepare all the products and to agree their use with all actors involved.

Barrier 3: Start-up problems with digital parking machines – Due to some start-up problems with the digital parking machines the implementation was delayed by six months.

Barrier 4: removal of the obligation to enter license plate numbers – There have been political discussions about the privacy of car parkers which resulted in the political position that users need to give permission to the city before the city can use personal information. Since motorists cannot formally give this permission, they cannot be obliged to enter their license plate number.

Barrier 5: digitised products make the process more complex – The system is sensitive to errors/problem that might occur in the whole process. For example when the phone network does not work, the parking machines and the officers cannot work either. It is very important that the staff understand the whole system in order to quickly identify potential problems.

D3 Drivers –

The city was responsible for enforcement – The fact that the responsibility for parking enforcement shifted from the local police to the Parking Department of the City of Utrecht on January the 1st of 2008 was one of the most important drivers for the introduction of the new system.

The **technical possibilities** of the new system provided many possibilities and features for the parking measures, which increased appreciation for the new system among the users (both visitors and residents). The digitalization of the parking permits also allowed the possibility for more flexible products.

Mobile Parking has facilitated the implementation of the system because it creates many advantages for motorists, e.g. people do not need to walk to the parking machine anymore.

The description was based mainly on two reports:

- Stumpel-Vos, P. and van de Vosse, W. (2012), Measure Evaluation Results – UTR 3.1 Innovation of the system of parking permits and rates, CIVITAS MIMOSA report, 9 November 2012;
- Gemeente Utrecht (2013), Nota Stallen en Parkern, February 2013.

On-street parking enforcement and management through a sensor system**Country:** Italy**City:** Treviso**A1 Objectives**

The main objective of this measure was to improve the city's parking policy both in terms of efficiency and in terms of user friendliness. This has been achieved mainly through:

- A massive use of Information and Communication Technology (ICT) to manage the parking area, namely the use of sensor technology;
- A reduction in the enforcement costs (i.e. less wardens);
- The use of the data generated by the system to be able to better evaluate the effects of parking policy and to help the (political) decision making process.

A2 Description of the CS

Since 2010 the city of Treviso has used of the lpark system to manage the inner-city parking area, called TREVISOSTA. This parking management system utilises sensor technology to manage approximately 2,400 on-street parking spaces in the city centre. Each parking space is provided with a sensor and a number (see figure 1). The sensor is able to detect the presence of a vehicle and to send this information to the system. A car driver must pay for parking at the parking meter: he has to enter the number of the parking bay where he parked and the amount of time he wants to stay. It is not necessary to put the ticket issued by the parking meter in the car's front window. They system automatically checks whether there has been a payment for the parking bay where the sensor detects a vehicle. There is no need for wardens to check the area. In case of any deviation – i.e. a sensor detects a vehicle in a bay for which no payment has been made – the monitoring team (wardens) can easily identify the vehicle that has not paid and issue a fine.

If the user wants to extend the parking time he can do it from any other parking meter in the central area (there are 54 parking meters in the whole area) or via mobile phone by indicating the number of the parking bay where he/she parked the car. This has increased the user friendliness of the parking system.

The main advantages of the system are: more efficient enforcement (i.e. lower costs), a higher user friendliness and the generation of detailed parking data that are used to shape the parking policy. Additionally, the user friendliness of the system contributes to better acceptance of the parking management measure, namely paid parking.



Figure 1: Sensor, parking bay number and parking meters of the TREVISOSTA system.

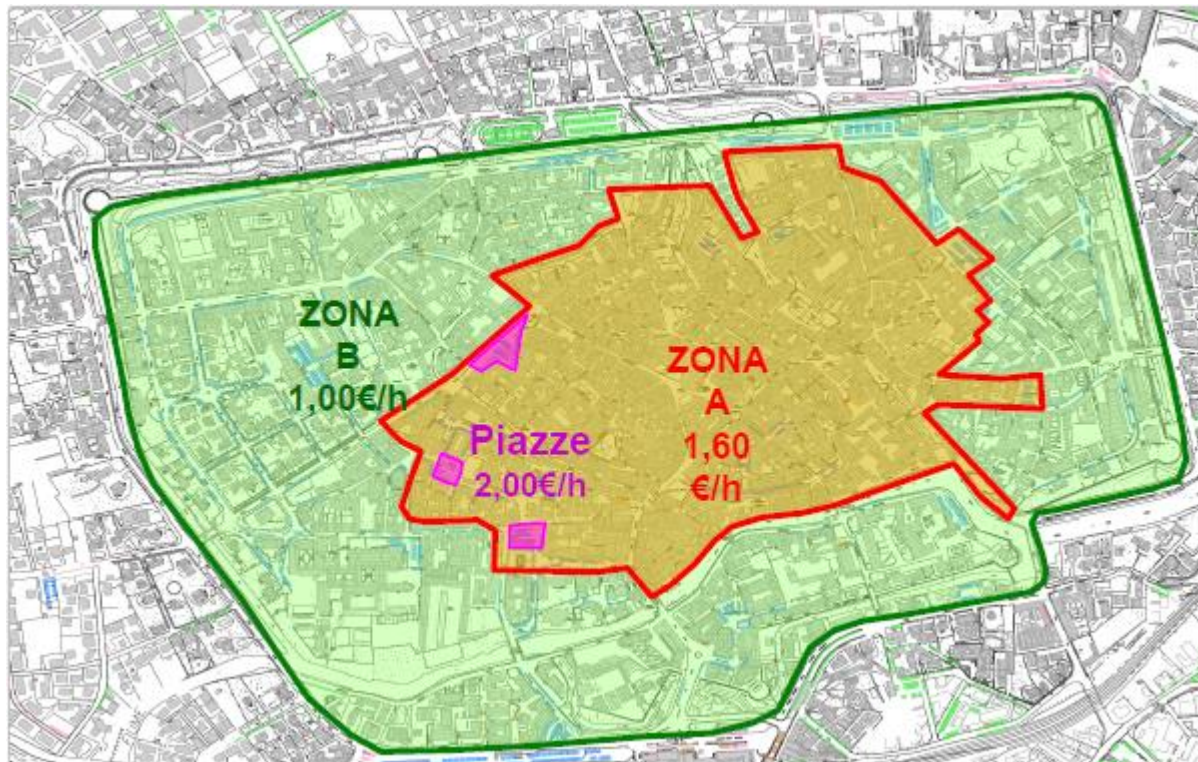


Figure 2: the parking management area in the innercity has two zones (A and B) and three tariffs.

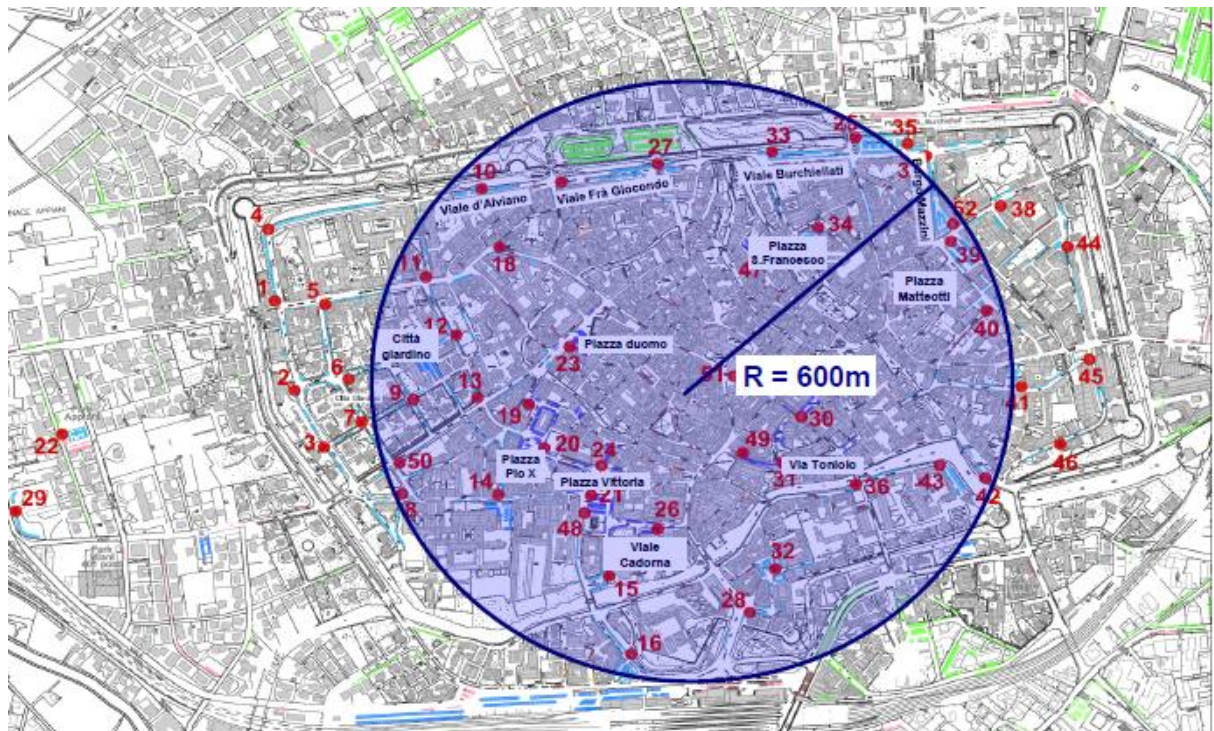


Figure 3: 52 parking meters are enough to cover the whole parking management area, which includes 2,400 parking spaces on-street.

B Costs and who paid them

The parking management system has been paid by the (private) company that runs the system. Accordingly it did not lead to any extra costs for the municipality. The private company running the systems gets a fixed percentage of the revenues as fee.

C Project objectives, indicators, data and impact/results

OBJECTIVE	INDICATOR	DATA USED	IMPACT/RESULTS
<i>Reduce the enforcement costs</i>	<i>Number of wardens used for the enforcement</i>	<i>All data come from the Parking Management System of the city</i>	<i>The local authority utilizes only a few people for enforcement</i>
<i>Improve the user-friendliness of the system</i>	<i>Surveys</i>		<i>Surveys among users suggest that both drivers and local entrepreneurs are happy with the parking system</i>
<i>Improve the monitoring system for the local authority</i>	<i>Real time data on occupancy</i>		<i>Creation of a dataset that allows the local authority to monitor the effects of new policies (i.e. change in tariffs)</i>
<i>Use of data to better shape policy</i>	<i>General data collection</i>		<i>Data are now used during the decision making process for new policy</i>

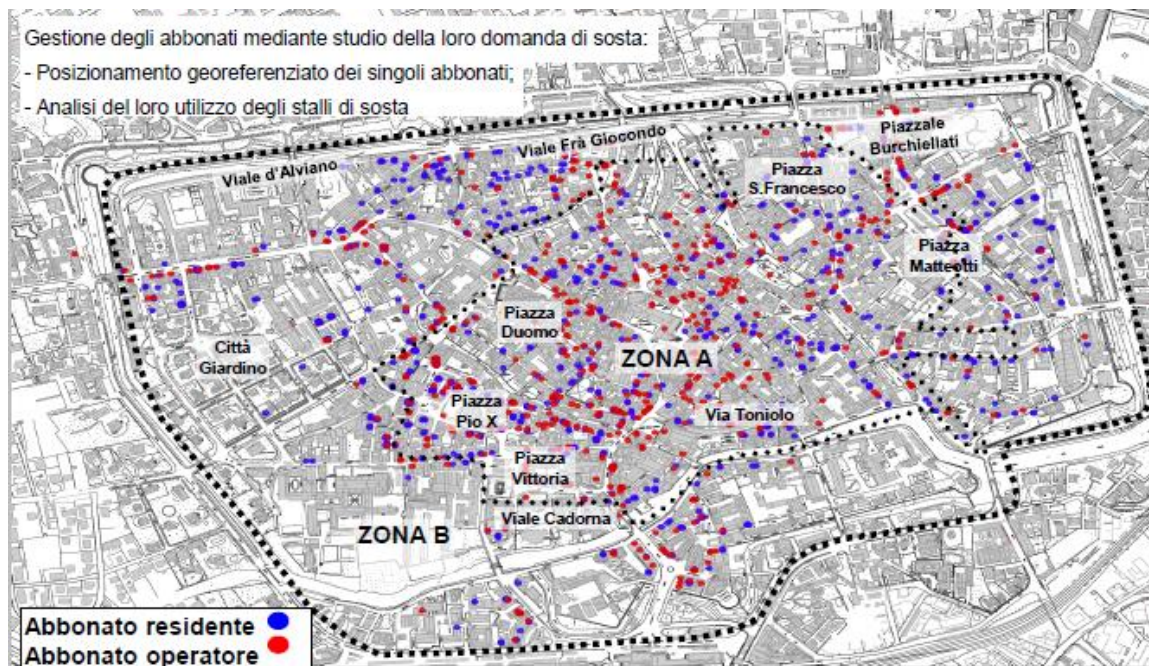


Figure 4: example of the data provided by the system: blu dots are residents holding a permit, red dots are non residents holding a parking permit.



Figure 5: example of the data provided by the system: real time information about the occupancy ratio per parking lot.

D Implementation process

D1. Stages

In 2010 the local authority decided to invest in new technology in order to manage the parking system in the central area. It has been decided to make use of sensor systems: each parking lot has been equipped with a sensor (see figure 1) that is able to detect a vehicle parked.

D2 Barriers

No specific barriers and/or problems have been encountered. The funding issue has been solved by outsourcing the whole parking management system. The total investment – i.e. the installation of the sensors in each bay and of the new parking meters – has been paid by the private company that operates the system. The company gets a fee of the total parking income and is responsible for the functioning of the system.

D3 Drivers –

- **The city was willing to invest in ICT to improve the management of the parking area** – The advantages offered by the sensor system were one of the main reasons to adopt this kind of parking management system.
- The **technical possibilities** of the sensor system provided several benefits both for the drivers – increased user friendliness of parking – and for the local authority – reduce enforcement costs, better monitoring and state-of-the-art information to better shape policy.

- **Funding** has been facilitated by the outsourcing of the exploitation aspect of parking. The whole investment has been made by the private company operating the system, which gets a fee of the total parking income. No extra costs were incurred by the local authority.

The description was based mainly on two reports:

- Gini, S., Mingardo, M., D'Allanol, M., Ambrosino, G. and Liberato, A. (2014), *Sustainable mobility governance in small and medium historic town: the LIFE + PERTH project approach*, Transport Research Arena 2014, Paris;
- Mingardo, M. (2014), *Le città' cintate al tempo della smart city: modelli, strumenti e proposte per lo sviluppo sostenibile*, conference presentation, Lucca, 10th October 2014.

Free Metroshuttle financed by a ring-fenced parking reserve

City, Country: Manchester, England

Year(s): Since 2002, ongoing

A1 Objectives

As part of the campaign to become Britain's Greenest City Manchester is committed to reducing the City's carbon emissions. Target 1 of the Green City programme aims to reduce city-wide CO₂ emissions at a rate exceeding the Kyoto agreement.

A2 Description of the CS

One of the main contributors to CO₂ emissions in Manchester is from vehicle exhaust. To tackle this Manchester has been working with the other Greater Manchester Councils to put together a range of proposals that will transform public transport in the region. However, Manchester City Council also appreciates that for some people travelling by public transport may not always be a viable option. That is why Manchester City Council has joined forces with NCP Manchester Ltd to reward drivers of low emission vehicles, and try to encourage those parking in the city-centre to switch to low emission vehicles. Manchester City Council and NCP have launched a unique Green Badge (=>Pollute Less, Pay Less) parking scheme which offers a discount of 25% on the cost of an annual season ticket at various city centre car parks.

Manchester City Council has also a joint venture with NCP Car Parks for off-street parking (i.e. commercial car parks) and encourages visitors to use an NCP car park during their stay.

The new owners re-focused the company's operations, changing NCP from a mainly property owning company into a more service-focused organisation in the broader transport sector. In 1999, NCP launched the UK's first private-public partnership – setting up a joint venture with Manchester City Council to establish NCP Manchester Ltd (NML).

NML runs 43 car parks with over 15,000 spaces across Manchester. The NML partnership allows Manchester to benefit from the parking expertise NCP has developed as the market leader in car parking, whilst providing the flexibility to support the city in the delivery of its strategic transport planning.

Metroshuttle buses link Manchester's city's train stations and NCP car parks with its shops and businesses. Metroshuttle is a free city centre bus funded by Manchester City Council, Transport for Greater Manchester, NCP and Allied London. The service links all the city centre railway stations, main car parks and many bus and Metrolink tram stops. Metroshuttle buses are low-floor, easy access, diesel-electric hybrid buses.

The Manchester City Council Executive Report on Resolution (2010) stated the Community strategy as follows:

Community Strategy Spine	Summary of the contribution to the strategy
Performance of the economy of the region and sub region	An efficient and well functioning transport network is essential to the economic performance of the city and the region – Metroshuttle services provide good connectivity from main public transport termini and car parks to key destinations in the city centre.
Reaching full potential in education and employment	Accessibility to the transport network is key to local residents being able to connect to education, training and jobs
Individual and collective self esteem – mutual respect	An accessible transport system gives people access to a wide range of leisure and social networking opportunities
Neighbourhoods of Choice	Metroshuttle services in the city centre support residents in the central wards who choose not to own a car or, if they do, to use it less.

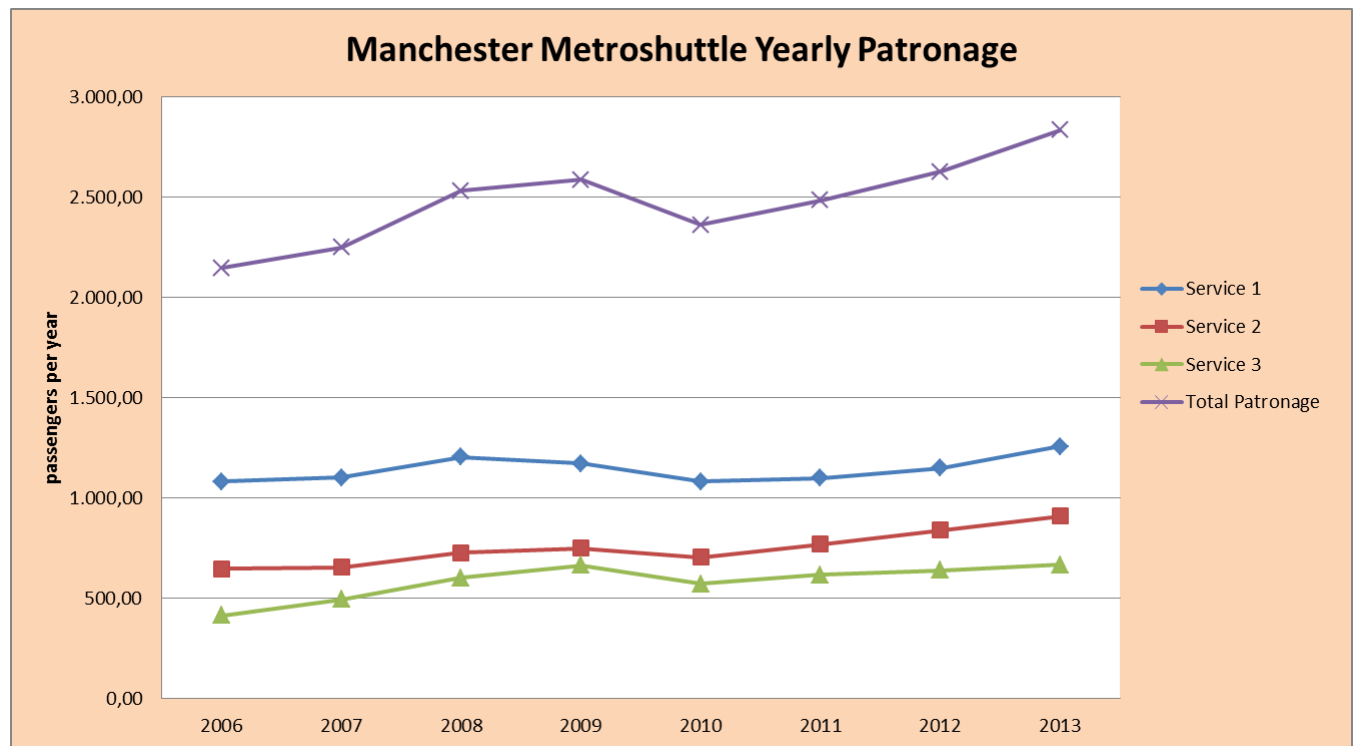
B Costs and where the money came from

Patronage	2006	2007	2008	2009	2010	2011	2012
Shuttle 1	1,082,518	1,100,868	1,204,310	1,172,822	1,083,018	1,098,576	1,149,098
Shuttle 2	648,072	653,598	726,23	749,544	705,289	769,456	838,6
Shuttle 3	415,235	494,595	600,829	663,772	572,808	617,664	639,854
Total Patronage	2,145,825	2,249,061	2,531,368	2,586,138	2,361,115	2,485,696	2,627,552
Annual Cost in £	1,253,358	1,284,470	1,539,005	1,556,143	1,500,935	1,500,935	1,500,935
Cost per Passenger in £	0,58	0,57	0,61	0,60	0,64	0,60	0,57

According to the Manchester City Council Executive Report on Resolution (2010) the current annual cost of operation the Metroshuttle service was £1,639 m. **Manchester City Council currently fund £455.2k of this cost from the ring-fenced parking reserve (that is, money that has been generated from charges for on-street and city-owned parking in the city centre and elsewhere).** This was agreed by the Council in March 2002. The annual cost of operation of the new service will be £1.911 m. The annual contribution from the parking reserve will increase to £ 544.3k.

C Project objectives, indicators, data and impact/results

Only a few evaluation data – apart from development of patronage, costs and customer satisfaction - were found. But the three lines of the Metroshuttle have enjoyed steady patronage growth and now carry over 2.5 m passenger annually.



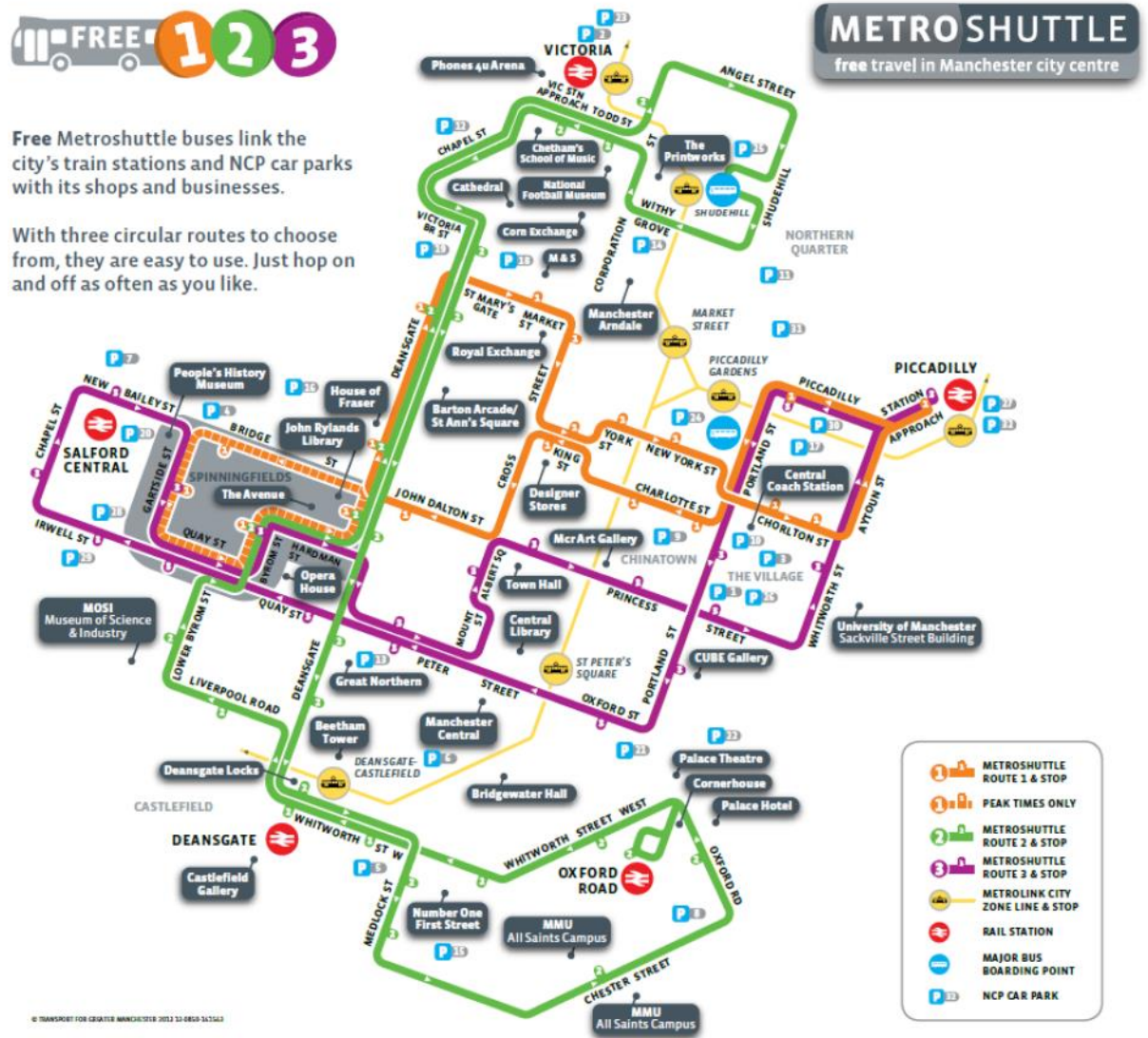
D Implementation process

D1. Stages

The CS was implemented, as follows, in the following stages:

Stage 1: 2002: introduction of the free-to-user city centre bus network called Metroshuttle; copied both within the Greater Manchester and by other regions.

Stage 2: 2009: revised service contract model with 20 low carbon diesel-electric hybrid buses



The description was based on the report

- http://www.transportforgreatermanchestercommittee.gov.uk/tfgmc/download/downloads/id/4911/item_06_metroshuttle_patronage_and_service_performance
- [http://www.manchester.gov.uk/info/100011/roads_parking_and_transport/2542/metroshuttle:](http://www.manchester.gov.uk/info/100011/roads_parking_and_transport/2542/metroshuttle)
- [http://www.manchester.gov.uk/info/500117/green_city/3835/green_badge_parking:](http://www.manchester.gov.uk/info/500117/green_city/3835/green_badge_parking)
- <http://manchestertransport.wordpress.com/2010/11/07/metroshuttle-free-city-centre-bus-service-goes-electric-hybrid/>
- [http://www.local.gov.uk/web/guest/economy/-/journal_content/56/10180/3511595/ARTICLE#contents-6:](http://www.local.gov.uk/web/guest/economy/-/journal_content/56/10180/3511595/ARTICLE#contents-6)
- [http://www.transportforgreatermanchestercommittee.gov.uk/tfgmc/download/downloads/id/4581/item_09_kpis_and_forecasts.](http://www.transportforgreatermanchestercommittee.gov.uk/tfgmc/download/downloads/id/4581/item_09_kpis_and_forecasts)

Measure title : A modern tram network as the key element of an urban development and mobility strategy

City, Country: Strasbourg, France

Year(s): Implementation since 1990, ongoing; plans until 2020

A1 Objectives

Since 1990 the Communauté urbaine de Strasbourg (CUS) has pursued these main objectives at the core of its transport policy:

- Development of an efficient public transport system with the help of the tram network
- Reduction of the car traffic within the city centre and on access roads into the city centre
- Create and complete bypass roads in order to route the through traffic around the city

A2 Description of the CS

The Communauté urbaine de Strasbourg has 28 municipalities with about 460,000 inhabitants; the City of Strasbourg with about 270,000 inhabitants and 50,000 students is the centre of it. Strasbourg's first tram started running in 1878, extending to more than 234 km in the 1930s, but with the system closed in 1960. In the 1970s and 80s a long debate and decision process took place about whether to build a subway (underground) line or a tram line (above ground). Apart from the choice of technology, it was mainly a debate on the future of the city. The mayor from 1989-1997 Catherine Trautmann won her election in 1989 on the promise of the renaissance of the tram.

Since 1994 a tram network with today 6 lines has been implemented and it is still growing. But only together with the following measures the strategy became such great success:

- Upgrading public space
- Restriction of car traffic in the city center
- Development of a P&R-System
- Reorganization of the bus network
- Social tariff structure for public transit
- Development of pedestrian zones
- Encouragement for cycling
- Finally an implementation on bicycle sharing scheme

Some examples show the upgrade of public space:

Rue des Francs Bourgeois

Strasbourg.eu
COMMUNAUTÉ URBAINE

Before: 20,000 motorized vehicles per day



Afterwards: An attractive location through traffic calming



Place Kléber Strasbourg.eu
COMMUNAUTÉ URBAINE



Before: A roundabout with 40,000 motorized vehicles per day



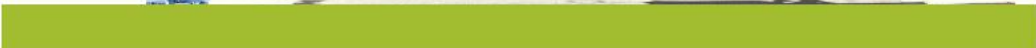
Afterwards: A place for strolling without (motorized) vehicles



Boulevard de la Victoire Strasbourg.eu
COMMUNAUTÉ URBAINE



Afterwards



Implementation of pedestrian zones

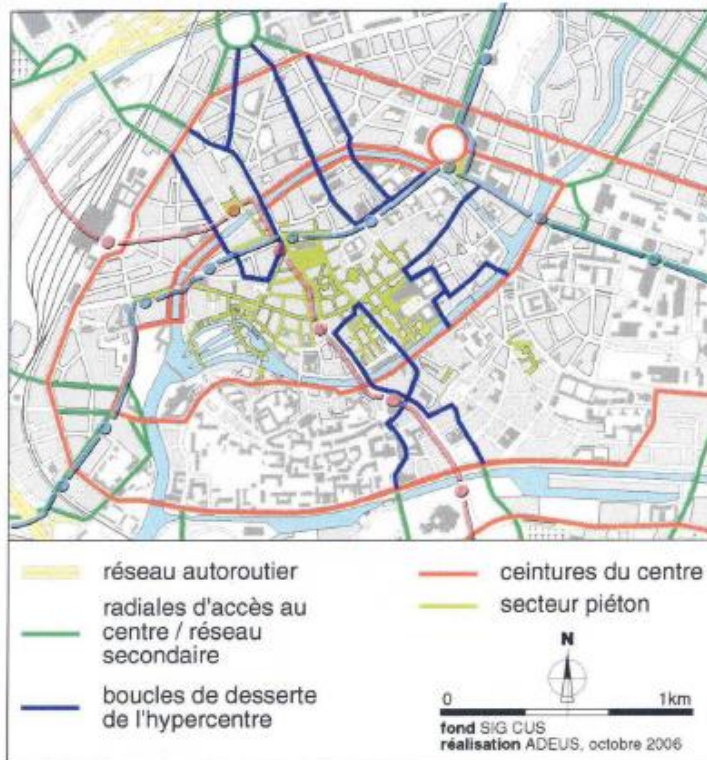


An advantage for businesses and tourism



The restriction of car traffic in the city center is one of the key success factors of the package of measures and has comprised the following:

- No through traffic in many areas
- Enlargement of pedestrian zones
- Implementation of bicycle routes and bicycle racks
- Installation of parking garages (off-street parking) and reduction of on-street-parking in favour to upgrade public space
- The tram as an engine for development of the city



Development of a Park& Ride-System:

- 4.000 parking spaces
- 3 Euro per vehicle incl. tram ticket
- 5% of the tram user are using P&R; on Saturdays 15%

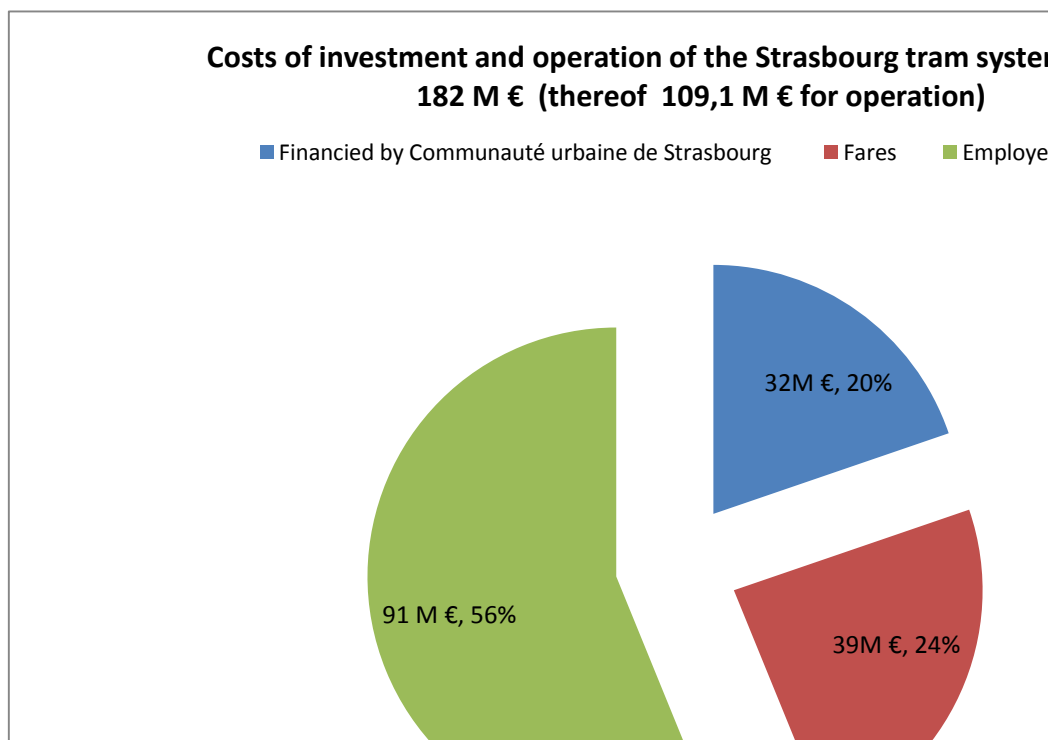


B Costs and who paid them

Since 1970 the “*versement transport*” (an employer payroll tax to support public transport) has been in existence:

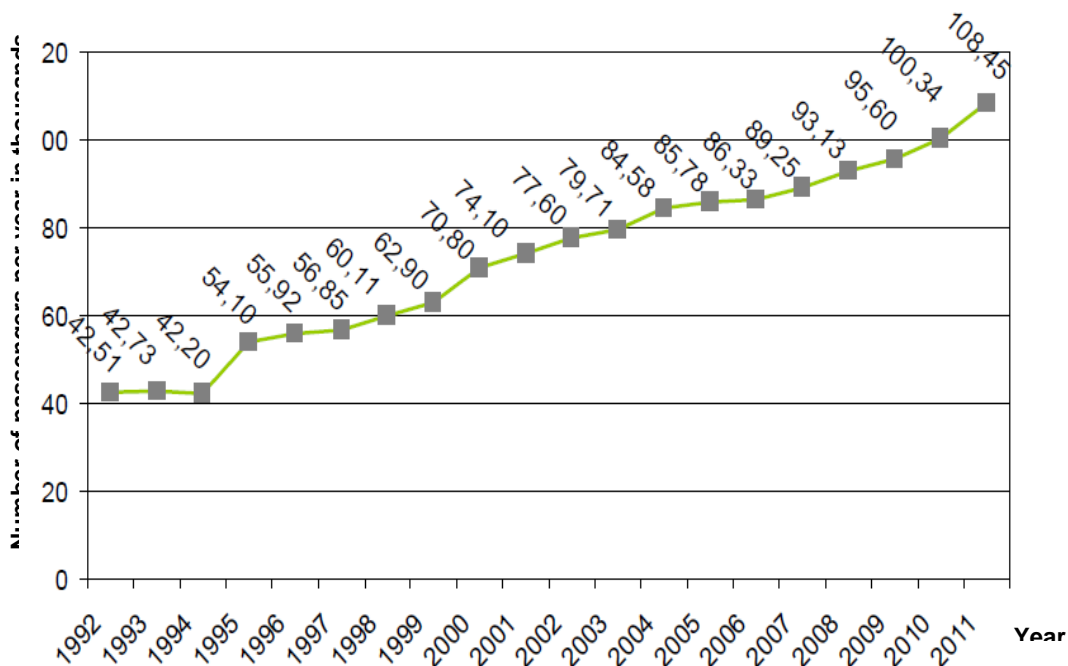
- Employer-levy for financing the urban public transport system (infrastructure and operation)
- Due for all companies with 9 or more employees in cities or regions with more than 100,000 inhabitants
- Percentage rate (on basis of the gross payment) is dependent on the size and the type of the transportation network

10,000-100,000 inhabitants	50,000-100,000 inhabitants with tram/BRT/metro	>100,000 inhabitants	>100,000 inhabitants with tram/BRT/metro	Joining areas	Tourist areas
Max. 0,55%	Max. 0,85%	Max 1%	Max. 1,75%	+0,05%	0,2%

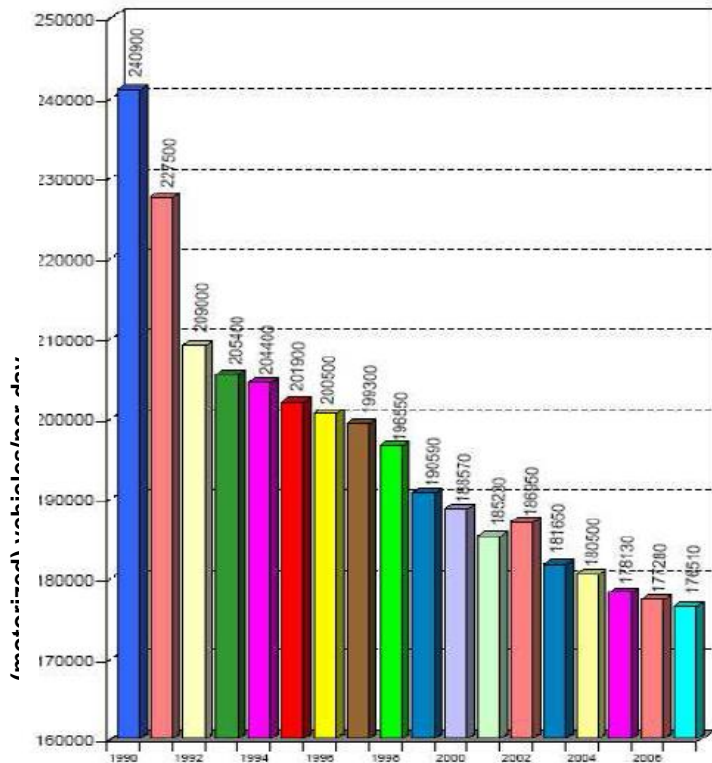


C Project objectives, indicators, data and impact/results

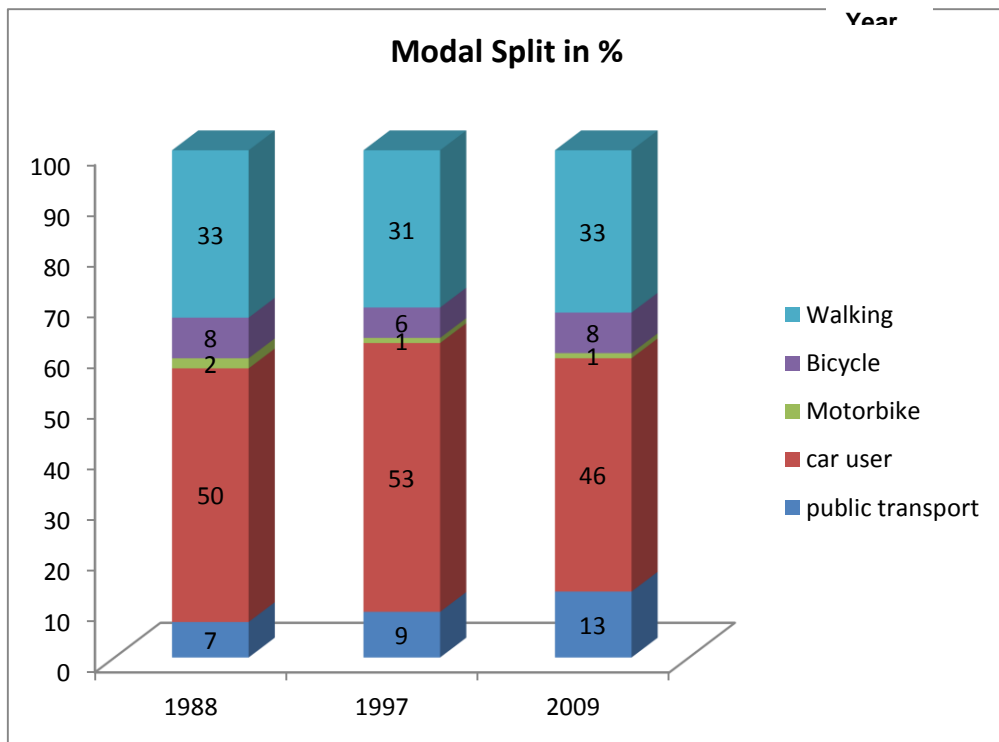
OBJECTIVE	INDICATOR	DATA USED	IMPACT/RESULTS
<ul style="list-style-type: none"> - Development of an efficient public transport system with the help of the tram network 	<ul style="list-style-type: none"> - modal split 	<ul style="list-style-type: none"> - Patronage (User of public transport each year from 1992 up to 2011) 	<ul style="list-style-type: none"> - Increase of public transport users (more than doubling the number in 20 years); - 13 % for PT in the modal split (2009)
<ul style="list-style-type: none"> - Reduction of the car traffic within the city centre and on access roads into the city centre 	<ul style="list-style-type: none"> - counting car 	<ul style="list-style-type: none"> - Number of vehicles in the street 	<ul style="list-style-type: none"> - Less than 50% car use in the City Center: Strasbourg is the best ranked city in France (decrease from more than 240,000 vehicle/d down to 180,000/d) - Strengthening of the non-motorized mobility: 33% walking and 8% cycling



Patronage of public transport in Strasbourg 1992 to 2011



Strong decrease of vehicle in the city center and on the access road



D Implementation process

D1. Stages

The CS was implemented, as follows, in the following stages:



Stage 1: 1994 : line A: 9,8 km

Stage 2: 1998 - 2000: extension line A + implementation of lines B, C and D: 21,4 km

Stage 3: 2007 – 2008: extension lines B, C and D + implementation: line E: 22 km

Stage 4: 2010 – 2013: extension lines A, C and D + Line F: 6,5 km

Stage 5: 2013: Implementation of a BusRapidTransit(BRT)-Line G

D2 Barriers –

Barrier: Building the first tramline was the hardest. It was particularly difficult to convince shop owners that it was a good idea.

Overcome: Weekly meetings were held on the building site between the organisation building the tram line together with the affected shopkeepers and residents.

D3 Drivers –

- **Driver 1** - As stated above the mayor of Strasbourg from 1989-1997 Catherine Trautmann won her election in 1989 with the promise of the renaissance of the tram. In the local elections in 1989 she advocated the re-establishment of the tram, while her rival Marcel Rudloff was in favour of a Metro. With her election victory, the project was realised, and it became obvious that it would play an important role in the enhancement of the cityscape of Strasbourg.
- **Driver 2** - The France-wide employer-levy called “versement transport” gives a solid basis for financing the urban public transport system (infrastructure and operation)
- **Driver 3** - An integrated approach to combine urban and transportation development was and is still realized; the Plan Déplacements Urbains (the new transportation concept from 2009) connects new building activities with the expansion of the tram network.

Details: what document(s) was (were) used for answering the questions.

All charts and pictures were taken from a presentation by

Christian Berger, Direction de la Mobilité et des Transports, Service Déplacements, Communauté urbaine de Strasbourg (CUS) held at Difu-Seminar: “Attraktiven ÖPNV entwickeln unter dem Handlungsrahmen eines novellierten PBefG – Erfahrungen und Lösungen” in Berlin on 11th November 2014

Information about Catherine Trautmann

- <http://www.de.strasbourg.eu/de/strassburg-entdecken/organisation-der-stadt-und-der-stadtgemeinschaft-strassburg/rathaus-von-strassburg/praesentation/>
- http://de.wikipedia.org/wiki/Catherine_Trautmann

National maximum parking standards as part of national government planning guidance to local authorities, PPG13 (now replaced by one national planning guidance document)

City, Country: All municipalities, England (UK)

Year(s): PPG13's maximum parking standards applied from 2001 to 2010

A1 Objectives

The main objective of PPG13 was to use the planning system to reduce the need to travel and to reduce the use of the car to access developments. Maximum parking standards are seen as an important way to achieve the second objective and indeed the limited literature on this topic bears this out (see COST342 report (2006)), for example.

A2 Description of the CS

In the English planning system, decisions on the shape of local area plans and on what is allowed to be built are taken by local authorities (municipalities). However, national government issues planning guidance that local authorities must take into account in their plans and in decisions on what is allowed to be built. One part of the guidance covers the transport aspects of new buildings (developments).

As their name suggests, England's maximum parking standards (MPS) set nationally-applicable maximum amounts of parking that were allowed to be built with new developments. The MPS were an Annex to the then PPG13, although they were only introduced in the last version of PPG13 in 2001. Earlier versions of PPG13 suggested that local authorities set their own maximum standards at local level, but many were reluctant to do so because of the fear that neighbouring authorities would set less restrictive standards in order to attract development. Therefore national standards were introduced to reduce this risk of local authorities competing for development by offering more generous parking. The standards in PPG13 did not apply to residential developments. The standards and the minimum size of developments to which they applied are shown below. This meant that many authorities were in the situation of having maximum standards for large developments and their previous minimum standards that continued to apply for smaller developments. PPG13's maximum parking standards applied from 2001 to 2010 at which point they were abolished due to central government concerns that they had negative economic development impacts. The empirical evidence for these impacts was however difficult to find (see DfT, 2008).

B Costs and who paid them

Costs are not known. However, the direct costs were low: only those involved in consulting on and then adopting a guidance document produced by central government. Implementation costs – in terms of the parking provided with new developments – were paid by the builders of these new developments, as they were when minimum parking standards applied, previously. This means that the standards could in many cases reduce the land and construction costs associated with new developments.

C Project objectives, indicators, data and impact/results

This was not a single project – rather, it was a regulation that was intended to have impacts across all large developments in the whole country. No systematic data were collected to assess the impacts of the regulation. Maximum parking standards were applied in Scotland also, and the author collected from City of Edinburgh Council data about three large developments in that city, which also undertook travel surveys to measure the modal share for employees based at each development (2004 and 2005). All these three developments are located in the suburbs of this city of 450,000 people, at a distance of between 4 and 8 km from the city centre, so in areas with moderate to poor accessibility by public transport. Had they been built with minimum parking standards, a mode share of 90-95% drive alone by car could be expected.

	Employees	Parking spaces	Car (drive alone) mode share
Hospital	4000	1200	60%
Bank	3000	1200	75%
Business park	7000	4000	57%

This was a period of continuous economic growth for most parts of the UK.

D Implementation process

There was really only one stage for implementation, which was to produce a draft of the standards and then to consult on them and adopt them. This was a process run by two central government departments (those responsible for planning and for transport) with input from mostly expert consultees – although any member of the public was free to respond to the consultation.

D2 Barriers

The standards were developed by central government but had to be implemented by municipalities, so it was these latter organisations that had to deal with any barriers. Principally these barriers – or problems – related to reports from a one authority (cited in DfT 2008) that the land that they had earmarked for development became less attractive to developers when it was subject to maximum parking standards; and that developments built with maximum standards led to overspill parking on surrounding residential streets. The former barrier was difficult to deal with but was an intention of the policy – to steer development towards areas more accessible by car. The latter was dealt with by the application of parking controls on residential streets, sometimes paid for by the developer, sometimes by the municipality; or, if less acute, it was not dealt with at all.

D3 Drivers

Demand from municipalities for national maximum standards, along with supportive national civil servants who were genuinely interested in demand management, and a supportive national minister, helped to drive the adoption of the national maximum standards. The experience of authorities that had already adopted their own local maximum standards prior to 2001 was also important.

References

- City of Edinburgh Council (2004, 2005) Internal Travel Surveys
- Department for Transport (UK), (2008) Research into the Use and Effectiveness of
- Maximum Parking Standards. DfT UK, London.
- PPG13 (2001) available at <http://webarchive.nationalarchives.gov.uk/20120919132719/www.communities.gov.uk/documents/planningandbuilding/pdf/1758358.pdf>
- This case study also uses text from the MAX project MaxLupo Case Study C20 available at <http://www.epomm.eu/index.php?id=2755>, written by the same author as this Push and Pull case study.
- Further information available from the case study author tom.rye@tft.lth.se

New on-street parking policy in the city centre after the new Public Transport Network implementation**Country:** Spain**City:** Vitoria-Gasteiz

A1 Objectives

In the year 2009 a new Public Transport network was implemented as the first large scale action in the first phase of the Sustainable Mobility and Public Space Plan of Vitoria-Gasteiz. The same day the new network was launched, a new on-street parking policy in the city centre was established in order to discourage private car use for travel into the central city.

A2 Description of the CS

Vitoria-Gasteiz changed its entire public transport system in October 2009, and the increase in passengers shows that the change is paying off. Combined with the new bicycle lane grid and pedestrian paths, the plan is clearly influencing people's travel behavior. Previously the network was based on 18 bus lines with frequencies of 20-30 minutes and long circuitous routes.

The new system is made up of 2 tram lines and 9 bus lines. The new bus lines all have 10 minute frequencies. Routes are now more direct, without compromising comprehensive coverage of the entire city. Allowing for more effective transfers between lines are a range of supporting measures, including bus lanes, queue jumpers, traffic light priorities and new platforms. The result is that passenger numbers have rocketed with an 85 percent increase in the number of trips per month since the first tramway line came into operation in January 2009.

A new network of more efficient, modern and attractive public transport was seen as necessary but not sufficient condition to ensure a modal shift towards public transport. For this purpose it was considered necessary to propose a new parking policy in the center of the city through a series of steps:

- Expansion of regulated parking area in the center of the city, with more streets inside the residential parking zone, so that the previous 3,800 parking places were increased by adding 1,100 new regulated places.
- Differentiation of new types of regulated parking (residents only, short to medium stay only, short to medium stay and residents) rather than the only previous typology (short to medium stay and residents).
- Establishment of an annual fee in order to benefit from resident card for regulated parking, instead of the free access to the card for residents.
- Significant increase in the price per minute for parking in regulated parking area. The price increased by approximately 200% compared with the previous price.

- A special regime for people who want to park for less than 15 minutes was established to avoid the practice of double parking on main roads.
- Enabling new Park&Ride car parks. The approaching roads were signposted and information about public transport was placed in these car parks.

The measure was applied immediately after the entry into operation of the new public transport network, with a unanimous agreement of all political parties in the city council. This action was coordinated and communicated together with the change of the public transport network, relying, like the rest of the work developed in the Plan of Sustainable Mobility and Public Space, on an intense participatory process.

B Costs and who paid them

The action was financed with the City of Vitoria-Gasteiz' own funds (new parking meters, bus shelters, bus lanes, new traffic signal prioritization, ...) and from the CIVITAS program (communication and awareness campaign). In any case the cost associated mainly with changes in the parking system was a tiny part of the overall cost in comparison to the cost of the reorganization of the public transport system, but the two elements were inextricably linked. The first Phase of the Sustainable Mobility and Public Space Plan had a budget of 26 million Euro, where the cost of the new public transport network was 7 million Euro.



Photo: eltis.org / Harry Schiffer

C Project objectives, indicators, data and impact/results

OBJECTIVE	INDICATOR	DATA USED	IMPACT/RESULTS
<i>De-incentive the private car use to access to the city centre</i>	<i>Modal split for private car.</i>	<i>Mobility surveys comparison between 2006 and 2011 data.</i>	<i>According to the 2011 Mobility Survey daily trips by car dropped from 36% to 28% compared with 2006 data.</i>
<i>Increase in the number of public transport users.</i>	<i>Number of public transport users.</i>	<i>Data obtained from the register of titles issued travel by bus and tram operators.</i>	<p><i>The new bus and tram network had a 43.5% increase in the number of trips per month (nearly 500,000 passengers more than before) during the first 6 months after the change.</i></p> <p><i>Since the introduction of the new system passenger numbers have rocketed with a 85 percent increase in the number of trips per month compared with 2009 data.</i></p> <p><i>The number of registered cars in the city has decreased in the same period by about 2,500 vehicles. The share of cycling doubled from 3.5 to 7% of all trips (up to 12% for to work trips).</i></p>
<i>Increase in the public transport commercial speed after avoiding double parking row in main buses itineraries.</i>	<i>Commercial speed for public transport bus routes.</i>	<i>Commercial speed average registered from the public transport routes.</i>	<i>Commercial speed was improved by 14.5% in only six months compared to before the network was launched. Thus, it went from a speed of 10.97 to 12.56 km / h. The average frequency offered increased from 15.73 to 10.77 minutes, with a 31.54% improvement.</i>

The most challenging element has been the continued participation of all stakeholders in an ongoing process that has lasted more than seven years. The Plan drivers have made considerable efforts to involve all the agents in a rich participatory process through the Forum (Citizen Forum for Sustainable Mobility) and an intensive communication with citizens. Each of the mobility measures undertaken was accompanied by an information campaign with illustrative material (brochures, posters), press releases, *ad hoc* content in the mobility

page of the municipal website and even dissemination of information at street level by the local police service.

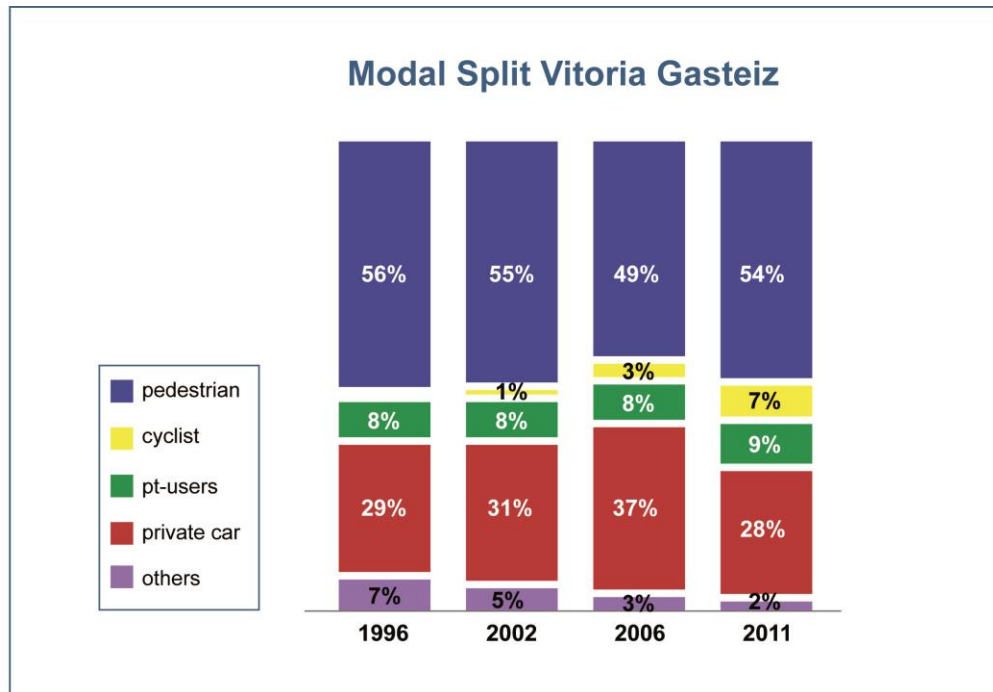


Figure: Modal Split in Vitoria Gasteiz – time row (Source: Vitoria Gasteiz)

D Implementation process

- 2006: First call of the interdepartmental coordination technical committee. This is a working group was composed of experts from different municipal departments with responsibilities in the field of mobility. This group works continuously in this field.
- 2006: A Citizen Forum for Sustainable Mobility was created with the aim of reaching a consensus on a scenario for future mobility in the municipality of Vitoria-Gasteiz.
- 2007: As a result of an in-depth participation process, a [Citizen Agreement for Sustainable Mobility](#) was signed, which defined a new city model. In this new scheme, urban transport must be compatible with improved public health, the quality of life, the urban environment and the local economy.
- 2007: First draft of the Sustainable Mobility and Public Space Plan. In this document, mobility is addressed holistically and the strategies defined in the Citizen Agreement are specified.
- 2008: Writing of the Phase I of the Sustainable Mobility and Public Space Plan with concrete measures for the development and implementation of the Plan for the period 2008-2012.

- From 2008 to 2009: Design of the new network, feedback from several stakeholders, communication campaign.
- Summer-Fall 2009: New public transport network and parking policy scheme pre-launching adaptation works and dissemination of the initiative.
- 2009, October 30th: Launching of the new network. Kick-off for the new parking policy scheme.

D1. Stages

The CS was implemented, as follows, in the following stages:

Stage 1: Pre-design and participatory process feedback (2008 to 2009) – One of the strengths of Vitoria-Gasteiz PMSEP and one of the reasons for the success achieved so far, is the continuing involvement of all stakeholders and, in particular, the general public. As already mentioned, this is also one of the challenges that have arisen continuously throughout the design process and implementation of the plan. Therefore, one aspect that has required a lot of work has been the citizen participation process that has been developed parallel to the plan.

Stage 2: Final design and dissemination campaign (Spring 2009 – Fall 2009).

Stage 3: Final implementation (Summer 2009)

Stage 4: Kick-off for the new on-street parking scheme the same day the new public transport network was launched (2009, October 30th)

D2 Barriers

The development process was conducted in a frame of shared learning among all the stakeholders: municipal technicians, politicians and citizens. Its basic principles derive from the [Citizen Agreement for Sustainable Mobility](#), written between 2006 and 2007 by a citizen forum, agreed by all participants and later endorsed by the City Council with the agreement of all political parties. Thus, the main barrier, the acceptance of the measure by the citizens, was much easier because it was supported by the previous participatory process.

An additional identified barrier was to obtain the support of the government team even after the political change occurred in the city after the last election in May 2011. The support of policy makers is required for technical decisions become a reality and was achieved demonstrating the technical feasibility and effectiveness of the measures and citizen involvement through the Citizens Forum for Sustainable Mobility.

D3 Drivers

The strong consensus between all political groups, providing unanimous approval of a Plan that, besides the political consensus, required the coordination of technical areas that usually operate separately, must be seen as a key driver. As was stated before, the most challenging issue has been the continued participation of all stakeholders in an ongoing process that has lasted more than seven years. The Plan drivers have made considerable

efforts to involve all the agents in a rich participatory process through the Citizen Forum for Sustainable Mobility calls and an intensive communication with citizens.

A wide range of stakeholders has participated. An interdepartmental technical committee was set up to oversee the work developed. The approach to implementing the Plan has been multidisciplinary and participatory, seeking the involvement, besides the different municipal departments, of as many citizens' organizations as possible: transportation professionals, reduced mobility groups, Council of Environment, Economic agents, Traders, Professional and Neighbourhood Associations, Council of the Agenda 21 for Schools ...

The high level of public participation, leading to the Citizen Agreement for Sustainable Mobility, has served to strengthen the collective sense of citizenship and enabled a common scenario to be drawn up, overcoming the conflicts of interest and adjusting the Plan to the requirements of citizenship.

Details: what document(s) was (were) used for answering the questions.

- <http://www.civitas.eu/content/sensitisation-campaign-sustainable-mobility-and-public-space-plan-vitoria-gasteiz>
- <http://www.civitas.eu/content/vitoria-gasteiz-enjoys-new-public-transport-network>
- <http://www.civitas.eu/content/more-100-volunteers-inform-users-about-how-use-new-public-transport-network-vitoria-gasteiz>
- <http://www.civitas.eu/content/new-parking-policy-support-sustainable-mobility-vitoria-gasteiz>
- <http://www.civitas.eu/content/public-transportation-breaks-records-vitoria-gasteiz>
- <http://www.civitas.eu/content/super-blocks-give-citizens-back-city-vitoria-gasteiz>
- <http://www.civitas.eu/content/new-park-ride-facilities-vitoria-gasteiz>
- <http://www.civitas.eu/node/7083>

Implementation of new access restrictions and parking management schemes in Krakow

Country: Poland

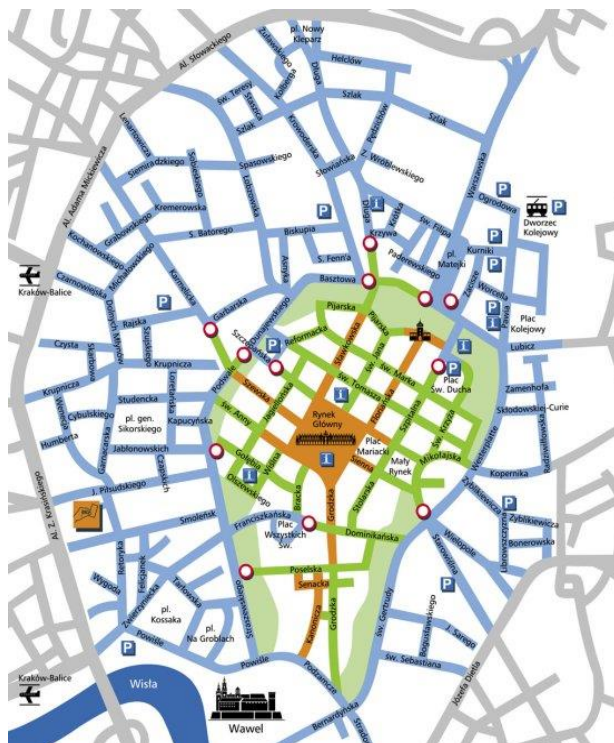
City: Krakow

A1 Objectives

- To extend access-controlled areas in the city
- To implement a new parking management scheme (removal of on-street parking places due to the implementation of new underground parking lots)
- To free-up public space
- To make the historic city centre more attractive to non-motorized modes of transport

A2 Description of the CS

Krakow was the first city in Poland to implement severe access restrictions in the city centre, based on three levels of access zones. “A” zone are restricted exclusively to pedestrians and cyclists; “B” zone is accessible for residents and goods delivery vehicles; while in the “C” zone, parking fees are applicable between 10 am and 8 pm.



Map: Existing scheme of A, B, C (red, green, blue) zones with restrictions for individual cars.

In response to the problems of congestion and poor air quality, the city is constantly implementing extensions of the paid parking zone and the limited traffic zones, improvements in public transport, including its integration within the wider metropolitan area, better service standards (including modern rolling stock), improvement of public transport connections at the national and European level and investments in bus hubs, integrated PT nodes, logistics centres and urban traffic control systems. There are also strategies related to improved parking management (including implementation of Park & Ride).

Parking standards for new development (e.g. parking-space-to-unit or per inhabitant ratios) are set in local development plans but only about a third of the city's area is covered by such local plans; implementing parking requirements in the remaining areas is not regulated in a uniform way.

Within this particular measure (partly implemented within the Civitas Caravel Project) the city intended to implement an updated parking management scheme in combination with some new access restrictions in the "B" zone. Around 300 on-street parking spaces in two large public squares were eliminated (thanks in part to the ongoing construction of a commercial underground car park). There were two areas where on-street parking was eliminated: Mały Rynek ("Little Square") with 100 parking places and Szczepański Square with 200 parking places. These two historic squares were used only as parking lots, but now they are once again restored to their previous condition and used as a space for pedestrians –both citizens and tourists.



Picture: Little Square before and after restoration.

The main activities focused on traffic reorganization in the city centre, including a new detailed project for the "C" zone. The detailed project for new access rules in the city centre was created on the basis of a wide consultation process and stakeholder involvement. The traffic restricted B-Zone has been enlarged by some several hundred metres. Also changes were implemented at Karmelicka street (a closure of both exits). These changes did not affect the overall "B" zone dimensions significantly, but both have had a real effect on reduction of car traffic in the area.

B Costs and who paid them

The main costs were related to the redesign of traffic movements and accompanying regulations at several intersections and streets within “C” zone in Krakow (ca. 30 000 EUR). Other costs concerned paint and signs for road markings, etc. (ca. 10 000 EUR). Concerning the renovation of the two public squares, there were high investment costs (ca 1.5 mln EUR).

All implemented changes are in place (i.e. measure is continued up to now).

C Project objectives, indicators, data and impact/results

OBJECTIVE	INDICATOR	DATA USED	IMPACT/RESULTS
<i>Extension of restricted area</i>	<i>% or km of roads</i>	<i>Measurement</i>	<p><i>B zone was extended to Szczepanski square and surrounding streets, with dimensions of approximately 62x62 m. and section of Dunajewskiego street to Garbarska street. The result of this operation is an increase of the length of the B zone by 310 m. Also there have been changes implemented at Karmelicka street (closure of both exits).</i></p> <p><i>Although these changes did not affect overall "B" zone dimensions significantly, both have had a real effect on car traffic in the area (due to limitations in possible through-traffic).</i></p>
<i>Reduction of car traffic in "B"-Zone</i>	<i>%</i>	<i>Measurement/Modelling</i>	<i>Direct measurements, supported by modeling, showed that intensity of traffic [vehicles/hour] before and after implementations decreased by ca. 20% (5122 v/h vs. 6429 v/h).</i>
<i>Eliminated on-street parking</i>	<i>Number of parking spaces</i>	<i>Measurement</i>	<i>There were two areas where on-street parking was eliminated: Mały Rynek ("Little Square") with 100 parking places and Szczepański Square with 200 parking places.</i>
<i>Public perception</i>	<i>% of persons having noticed positive changes in travel times</i>	<i>300 direct questionnaires - perception of PT passengers concerning time needed to travel in the area of Karmelicka and Dunajewskiego streets, where new access restrictions elements have been implemented. Citizens were asked about their perception of travel time (if it has been shortened/extended/no change occurred).</i>	<p><i>Surveys results:</i></p> <p><i>No change - 44,6%</i></p> <p><i>Shortened travel time – 49,3%</i></p> <p><i>Extended travel time – 6,1%</i></p>
<i>Vehicle fuel efficiency</i>	<i>l/vehkm</i>	<i>Modelling</i>	<i>Estimation of saved energy in private cars (modeling with micro simulation software Vissim). The difference between analyzed scenarios is 17 litres / hour for whole number of vehicles travelling within the calculation area (for one hour of simulation).</i>

D Implementation process

D1. Stages

Stage 1: Conceptual project of new access control strategy (01.2006 – 12.2007) Main activities from the beginning were focused on the creation of a conceptual plan for traffic reorganization in the city centre. It meant adapting existing plans to the current situation, and subcontracting a new detailed project for the whole “C” zone.

Stage 2: Finalizing of the detailed design of the new access control scheme (12.2007 – 03.2008) – a widespread consultation process and stakeholder involvement took place in order to create a final detailed design for the new rules for access in the city centre. The main stakeholders consulted were as follows: inhabitants of the zone, the shopkeepers’ association, road management structures, Police, city council, district councils and environmental lobby groups clubs. Many adaptations were made to take concerns into **account, mainly concerning road safety issues.**

Stage 3: New underground parking lots programme (05.2005 – 10.2007) – A new innovative tendering procedure including a public-private partnership was launched by UMK. As a result, a Spanish company was subcontracted to build and operate an underground parking lot at “Plac na Groblach” close to the historical city centre.

Stage 4: Implementation of first changes in the city centre traffic scheme (04.2008 – 03.2009) – concerning access restrictions and parking elimination:

- closure of exits from Karmelicka street (where trams were congested together with cars due to a narrow street after a reconstruction project that left a common lane shared by PT and private cars)
- extension of the “B” zone on the Dunajewskiego street and on streets around Szczepanski Square
- elimination of parking spaces in two historic squares in the city centre

D2 Barriers

- **Delays in the construction of underground car parks** - due to considerable political discussion and opposition from some city councillors, only some elements of the measure – the extension of the "B" zone - were implemented within the project. More access restrictions and elimination of on-street parking places was possible from July 2009, after the opening of the first underground parking lot (at Plac na Groblach). Building of new underground parking lots in the historical city centre is perceived as an innovative solution helping to reorganize parking management and to attract car drivers and ease conditions for PT, since congestion caused by cars nowadays creates big problems and takes space originally planned for pedestrians and cycles.

- **Lobby in City Council against extending access restricted B-zone** - The city administration (and specifically the department responsible for the administration of local roads) refused to implement the measure in its entirety and proposed several major changes. The initial scheme and the changes that it proposed were perceived by the department to be too demanding. The reason was that the city administration wanted to prevent complaints from residents, shopkeepers, other local businesses, and so on. An interesting point is that in internal talks with the mayor, he suggested an even more severe restriction. However, the main priorities for the city are hard measures such as the improvement of infrastructure (parking, roads and public transport). Therefore the measure implementation very much relied on the process of tendering and subsequently constructing the underground car park.
- **Negative public opinion** - Polish society is very much geared to possessing a private car. From the day cars became affordable and at the same time a symbol for freedom, Polish people strived to have their own car. Understandably, to alter this development is rather difficult. Moreover, a big part of Polish society is not aware of the problems caused by private transport and restricting car access is more often associated with hindering society's development than with a positive impact.
- **Negative Information and public relations** - From the very beginning the measure received much media attention since everybody could be affected by its implementation. Local media reported quite negatively about the plans to extend access restrictions in the inner-city. The lack of a professional public relations strategy and the focus on the technical implementation of the measure was the reason for the negative image. But this initial critique gradually turned into more positive coverage acknowledging the correct direction of the measure and admitting that building roads does not solve traffic problems.

D3 Drivers

- **Support from independent institutions** - several institutions such as the Polish Ecological Club or bicycle organizations were involved in the implementation process. However, their role was only limited and rather supportive than leading. Nevertheless, these institutions always sent positive signs to the outside world about the schemes and influenced broader public opinion. Their involvement was a crucial driver within the measure's implementation and should even have been enhanced. These organizations are independent, believable and reliable.
- **Involvement of external experts** as a partner with an own budget from the very beginning of the project. This approach helped to reach the citizens.
- **Engagement of the politicians which support sustainable mobility** - mainly Deputy Mayor has been engaged fully to support measure implementation (i.e. his presence on almost all stakeholders meetings and an important voice in the discussion).

Mobility Company City of Ghent as a merger of two former units (Parking Company and Mobility Department)

Country: Belgium

City: Ghent

A1 Objective

- To create a Mobility Company within the City of Ghent, which enables the City to work in an integrated way on mobility planning on different levels, from strategic to operational levels.
- To (partly) finance the planning and execution of the mobility policy using the on and off street parking incomes for sustainable mobility purposes.



The figure above shows the banner announcing the end of the Mobility Department and the Parking Company and the start of the new “Mobility Company” as from January 1, 2012.

A2 Description of the CS

The measure largely consists of the merger of the former City “Parking Company” and the Mobility Department in the city administration.

A short history

The city of Ghent had a so-called “parking company” since 1982. The Parking Company, fully owned by the city, was created to build, finance and run the first underground parking in the City (Vrijdagmarkt). A few years later, on street parking controls were installed in parts of the commercial heart of the City. The Parking Company was in charge of the enforcement of these on-street controls. Later on, they built a number of new parking garages and were still in charge of the ever increasing amount of paying “on-street” parking spots.

As an outcome of the Bicycle Plan, implemented in 1993, a small Bicycle Planning unit was created in 1994 within the City Administration. They were the nucleus of a real Mobility Department. Until then, most operational issues were covered by the Police, while strategic “traffic planning” was carried out by the Urban Planning Department.

In 1997, as a part of the “Mobility Plan for the Inner City” a clear parking policy was established, truly embedded in an integrated mobility vision for the inner city. The parking policy supported the proposed circulation scheme for the inner city, which created a pedestrian zone in the city centre, banned through traffic in the historical part of the inner city, provide for the bicycle. The Parking Company supported this policy, by installing a dynamic parking guidance system and by introducing a restricted parking policy, the so-called “stand still principle”: no additional parking spots would be built in the city centre. All new capacity in an underground garage had to be compensated by the removal of an equivalent number of surface parking spaces.

Thus, the role of the Parking Company became obviously more and more important. Between, 1997 and 2012, the Parking Company grew systematically, in accordance with a number of new underground parkings (always within the constraints of the stand still principle!) and the systematic extension of paid on street parking spaces (now about 20.000 on street parking spaces have to be paid for!).

Furthermore, in 1999, the bicycle planning unit was transformed and broadened into the new Mobility Department, largely because as a result of the Mobility Plan and subsequent work, there was a real need for such a Department in the City administration.

From the beginning on, the idea was to merge these two units (Parking Company and Mobility Department) into a new Mobility Company, but it took quite a few years to realize this.

While the Mobility Department was a pure part of the City Administration, the Parking Company had much more autonomy, although under control of the city council. Their tasks were mainly to exploit on street parking and to build and exploit parking garages. In 2011, they had about 55 employees.

Within the city administration, the Mobility Department was in charge of the overall mobility strategy and implementing mobility measures in the city. This included also the realisation of bike parking facilities and bike sheds throughout the City.

It was clear that the Parking Company and the Mobility Department had to work together very often. Parking issues are of course crucial in a mobility strategy. Although there was good co-operation between the two entities, it was not always clear who should decide on, for example, the opportunity to build a new parking garage, setting on street parking tariffs, and so on.

Also, sometimes a conflict of interest existed, for example when on street parking had to be removed for bus lanes or bicycle stands. The need for continuous consultation and joint working, overlap and possible duplication of work for some tasks, the parking company only focusing on car parking, and other related problems all conspired to make the situation less than ideal.

On the other hand, the Mobility Department suffered from time to time from a lack of funding, unable to create for instance, bicycle infrastructure, or off-street bicycle parking.

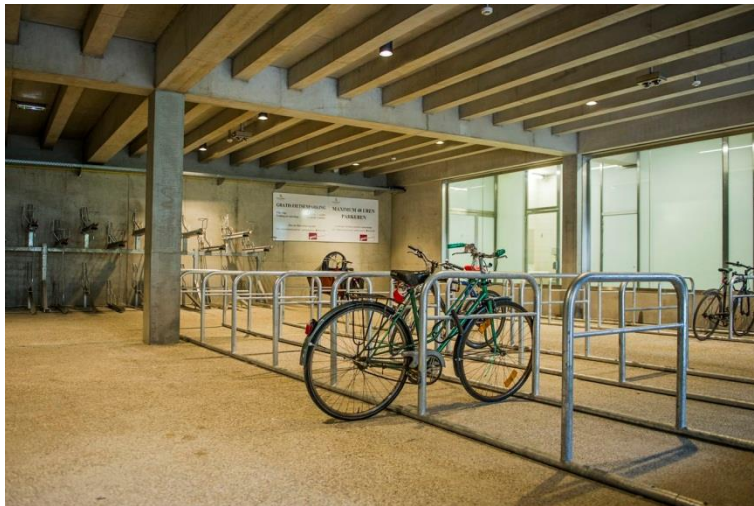
Moreover, this whole situation had as a consequence that parking policy was not always an integral part of mobility and spatial planning policy.

Around 2007, as a result of a new Decree of the Flemish Region, local authorities were forced to alter the scope of their “City companies” such as the Parking Company. The choice was either to transform the company in an “internal” agency or an “external” agency. In an internal agency the director has some more autonomy compared to a “regular” city department, although it is still under supervision of the City Council. An external agency is not directly under supervision of the City Council (there is an appointed Board of Directors) and has therefore much more autonomy.

There was a scrupulous screening on the pros and cons of the two options, but in the end the choice was for an “internal agency”, one of the main reasons being that an internal agency does not have to pay taxes on benefits, as it is considered as a local authority.

The new Mobility Company

The result was the creation of an internal agency, named the “Mobility Company of the City of Gent”, that was after merged with the Mobility Department. The Mobility Company has existed since 2012. At its inception the Director concluded a management agreement with the City Councillors, clearly setting out the tasks the Mobility Company has to fulfil. A remarkable goal was that from then on, the Mobility Company would also be responsible for building/providing for off street bicycle parking. This resulted almost immediately in the building of two underground parking garages for bicycles in the city centre and in the co-financing of a huge underground bicycle parking garage at the main railway station.



Underground bicycle parking in the city centre, paid for by the Mobility Company revenues

Due to this merger operation, the Mobility Company has now all the tools to install and execute an integrated mobility policy, from the planning stage at a strategic level, through implementation, such as raising parking tariffs, installing bicycle sheds, right up to the real time follow up of traffic situation on the field, all within one and the same entity.

The Mobility company has the following official main objectives:

- researching, implementing, and evaluating road safety measures in the context of the optimization of the mobility policy of the city of Ghent;
- managing and further development of the (bicycle and car) parking infrastructure;
- the further development of traffic and transport management in collaboration with both city departments and third parties;
- to support projects to improve mobility in Ghent and
- taking care of the communication and awareness raising with respect to parking and mobility.

Financial flow

The Mobility Company has a degree of financial autonomy. In the agreement it concluded with the City Councillors, an (increasing) amount of money has to be paid to the city; in this way the city benefits from the gains of the Mobility Company. However, after the payment of this fixed sum and after paying for personnel and expenditure, the remainder of the gains can be used for investment in car parking (including P&R lots) and bicycle parking.

Moreover, the costs for personnel and daily expenditure cover quite a wide range of mobility management measures, including:

- The Mobility Company pays 200.000 euro for the system of night buses in the city (the remaining amount is covered by the Public Transport Company)
- The Mobility Company pays about 60.000 euro/year to an NGO for exploiting a so-called “bicycle point” in the city centre (cycle hire, cycle repair, etc.)

- The Mobility Company will pay for a future small scale “shared bike system”
- The Mobility Company pays for studies or for consultants giving advice on sustainable transport and mobility
- Some members of staff are fully occupied with Mobility Management, e.g. a Mobility Manager for companies, a parking mediator, etc.
- Daily expenditure also covers the costs for campaigning for sustainable mobility

More in detail:

- The income of the Mobility Company consists of the parking revenue of both on street parking and the parking garages.
- All costs are deducted from this gross income: personnel, daily expenditure, smaller investments and maintenance costs, etc. As explained above, these “costs “ already include quite some expenditure on sustainable mobility.
- After deduction of all costs, we get the net benefit. For the latest year available, this benefit was about 7,5 million Euro. The amount due to the city is paid (this amount is fixed in the management agreement): last year, it was 1,6 million euro, but this amount will increase over the next years.
- The remaining amount goes in a kind of “reserve fund” that can be used for larger investments in car parking (including P&R3) and bicycle parking. The Mobility Company can make proposals for these new investments, but they have to be approved by the City Councillors.
- If necessary, the Mobility Company can also borrow extra money to have more funds for investments, observing some pre-set rules about the amount that can be borrowed.

The new structure of the Mobility Company

The new organizational structure (2014) consists of 4 units who work in close co-operation

1. Policy Unit

This “Policy” Unit is necessary to give room to the elaboration of a longer term strategic vision and always to keep an eye on “the bigger picture”. The Unit's objective is to elaborate the strategic framework for all relevant issues in the company, in cooperation with the relevant experts.

The Unit takes care of the strategic vision, such as the development of the mobility plan, parking plan, etc. but also includes a smaller sub-unit that is responsible for the transformation of the strategic vision into operational policy plans.

Another sub-unit is involved in monitoring and advising on urban development projects and supporting green travel plans for schools and companies.

- ³ The Mobility Company will pay for a (planned) P&R garage comprising of 530 parking spaces and at a cost of about 7,5 million Euro

The Unit also houses a “bicycle sub-unit” who is responsible for the development and elaboration of the cycling network, integrated cycling policy and a high quality bike parking policy.

The marketing sub-unit is the voice of the Mobility Company and ensures that Gent is in the picture, by focusing on branding, external communication, events and building awareness and paying attention to public participation, consultation and co-creation.

2. Operations Unit

This unit forms the well-oiled machine of the Mobility Company. The operation of parking facilities, the enforcement of bicycle and car parking regulations, new road signs and so on find their place here. By uniting these different operations, an advantage of scale was created and there is a greater likelihood of effective coordination of the works to be carried out.

This unit has also a new sub-unit, involved in roads signs and traffic orders. This new task was transferred from the Police Department to the Mobility Company.

Finally there is a sub-unit involved in creating a real multi-modal traffic control centre.

3. Project Office Unit

Project work was not yet established in the former entities, so this was also launched. They monitor a number of larger projects, the financial consequences of these, and are responsible for the monitoring and evaluation work within the Mobility Company.

In addition, the Project Office also has a number of project leaders who tackle larger projects. One staff member takes care of innovation, making sure the Mobility Company can invest in the latest techniques.

4. Support Unit

This Unit is responsible both for administrative support within the Mobility Company and for the first contacts with the citizens. Customer care is always in the picture.

ICT is one of the other components of this Unit. This Unit comprises also our in-house lawyers and a financial sub-unit.

B Costs and who paid them

The costs of the merger operation consisted in the fee for the consultancy firm that did an in-depth research in the choice between an internal and an external agency. The amount paid was about 175.000 Euro.

D Implementation process

D1. Stages

The transformation of the two former organisations into the combined Mobility Company happened in three stages:

1. The transformation of the Parking Company into the internal agency “Mobility Company”, January 2011
2. The merging of the Mobility Department and the Mobility Company, January 2012.
3. The integration of a number of former police tasks into the work of the Mobility Company (January 2015).

D2 Barriers –

The most difficult parts were:

The discussions about the legal issues: this was the first time that the city had created an “internal agency” and as such a lot of legal matters had to be resolved. There was close co-operation with the City’s legal department to tackle these issues.

The discussion on the financial issues and the management agreement between the City Councillors and the director of the Mobility Company also required a lot of discussion with other city departments, before a satisfactory conclusion could be reached.

D3 Drivers –

- The willingness of the politicians to merge the two units
- The support of the management of both units involved
- The support of the management committee of the city of Gent
- The willingness of the politicians to create the “reserve fund” for investments and therefore the willingness to have an agreement on the amount of the benefits that had to be transferred to the city. In fact if the decision had been to transfer all benefits to the city, it would be far more difficult to get/find money for investments in car parking or bicycle parking.

Details: what document(s) was (were) used for answering the questions.

- This document was written by Peter Vansenant of the Mobility Company of Ghent.

The Master Plan 1990-2000 and the role of parking in Maastricht

Country: NL

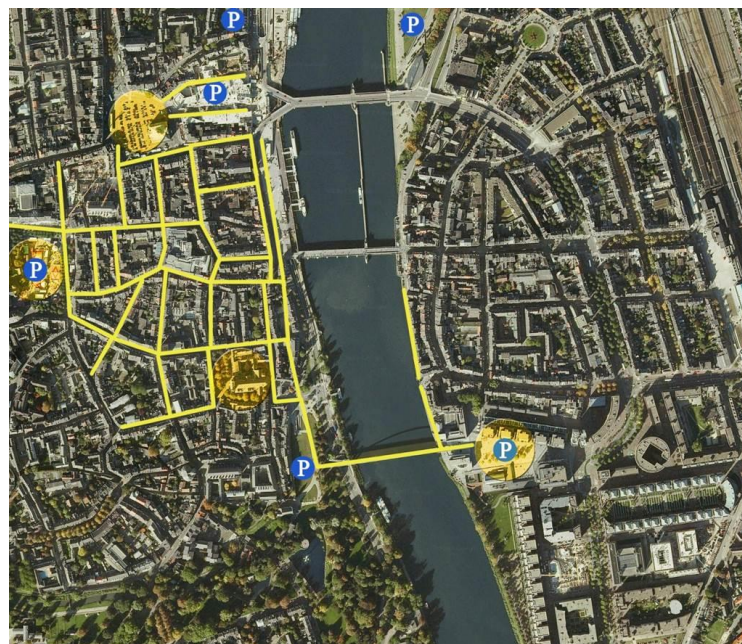
City: Maastricht

A1 Objectives

In recent years the quality of open urban space within Maastricht has become an important subject of political debate. The 1990-2000 Master Plan supported a strong and consistent policy of improving the quality of urban design for the inner city. The city council realised that a high quality living and working environment should have the impact of an “enormous magnet” on the overall economical viability of the city.

A2 Description of the CS

The quality of open space is mainly seen as a boost to the image and the identity of a city centre. A great effort was put into achieving a sense of style and spatial quality and more attention paid to the manageability of public space. The long tradition of parks and squares in Maastricht has definitely been an important source of inspiration for recent city development. When thinking of Maastricht it is certainly impossible to not keep in mind its famous triangle of squares formed by Vrijthof, Market and Onze Lieve Vrouweplein and it was necessary to free the public spaces of cars and parking areas.



the central pedestrian streets of Maastricht and the location of the parking structures.

The Municipality developed a strategic parking policy in 1996 to transform the use of the public space (streets and squares – large and small) of the inner areas of the city and the parking and parking tariff policy became central to the plan.

The present day parking system serving the central area costs €1 for a time period ranging from 17 to 43 minutes, the fee scale is based on the criteria of the closer to the city centre you get - the more you pay.



Today the central area of Maastricht is lively and dynamic with a prosperous downtown area. One of the important results of the accessibility policy is that the Municipality supported an increase in sales floor surfaces from 78,000 m² in 2000 to 110,000 m² in 2010.

B Costs and who paid them

There is a long term Public Private Partnership between the City of Maastricht and Q-Park. Q-Park invested in the rebuilding the Vrijthof car park and the complete renovation of an outer city centre car park and maintenance of another 8 (partially residential) car parks for a total investment of about € 25 million. The city receives a fixed commission based on the tariff settlements. The parking revenues have enabled Q-Park to recover the investments done, to implement the parking system. Without the current and future cash flows, the investments would not have been made. The duration of the City of Maastricht – Q-Park contract is 50 years.

C Project objectives, indicators, data and impact/results

OBJECTIVE	INDICATOR	DATA USED	IMPACT/RESULTS
<p><i>Improvement of downtown environmental quality – air, visual, noise.</i></p> <p><i>Freedom and pleasure of movement</i></p>	<p><i>Property value increase</i></p> <p><i>Increase of sales</i></p> <p><i>Increase of customers</i></p> <p><i>Increase of activity</i></p>		<p><i>Growth of economic activity</i></p>
<p><i>Co-mobility solutions</i></p> <p><i>Public transport</i></p> <p><i>Private transport (cars, etc)</i></p> <p><i>Pedestrians (walking running etc)</i></p> <p><i>Cycling</i></p>	<p><i>Increase in Accessibility</i></p>	<p><i>3 million people every year use the Mosae Parking Forum</i></p>	<p><i>Financial contributions (Private funding)</i></p>
<p><i>Value of historical fabric and public space</i></p>	<p><i>Increase in tourism</i></p>	<p>*</p>	<p><i>Improved well being - a better place to live</i></p>

*

18.6 million tourists came to Maastricht in 2006

10.1 million came to shop or dine;

6.5 million were that the Dutch call proper tourists (they stayed for more that a day)

0.5 million took part in conferences;

1.4 million participated in various events.

There were no major changes in framework conditions (e.g. local economy, politics) during the implementation period that may have affected the impacts of the case study

D Implementation process

The process of transformation concerned the transformation of parking places from free to paid parking.

- in 1996: 6100 spaces available of which 2400 free
- in 2000: 6450 spaces of which 700 free spaces
- in 2006: 7600 spaces of which 0 free spaces
- **spaces** in parking structures increased from 1700 to **4035**.

In addition to the 4035 off-street supply 1.772 parking and walking spaces were set up in outer areas and 175 spaces were destined to park and ride.

The final result being an offer of 5.807 parking spaces **servicing the transformed inner area guaranteeing accessibility at different price conditions.**

D1. Stages

The changes were implemented via the transformation of the usage of the surface parking areas and then completed by the building of the 1,082 capacity Mosae Forum parking garage in 2007. This parking structure substituted 400 surface parking spaces that were then transformed into the extension of the pedestrian area. This operation involved the City of Maastricht, the commercial operators, and Q-Park.

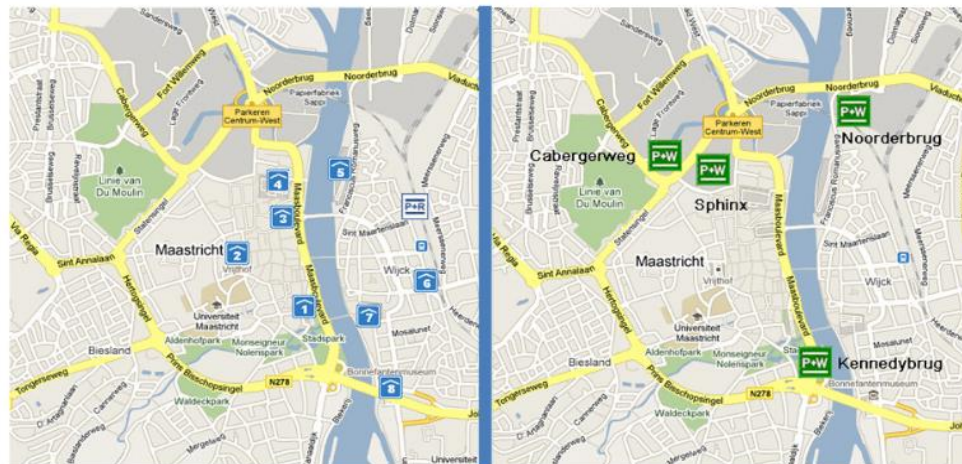
D2 Barriers

The most relevant task was to maintain the focus on the overall goal and objectives of the transformation.

Name	Capacity ¹	Opening hours ²
OL.Vrouweparking (P1)	350	Monday – Wednesday from 07:00 – 01:00 Thursday – Saturday from 07:00 – 02:30 Sunday from 09:00 – 01:00
Vrijthof (P2)	445	Monday – Wednesday from 07:00 – 01:00 Thursday – Saturday from 07:00 – 02:30 Sunday from 09:00 – 01:00
Mosae forum (P3)	1.082	24 hours / 7 day a week
Bassin (P4)	407	Monday – Saturday from 07:00 – 21:00 Thursday from 07:00 – 22:00 Sunday from 10:00 – 19:00
De Griend (P5)	351	Monday – Friday from 07:00 – 22:00 Saturday from 07:00 – 19:00 Sunday from 11:00 – 18:00
De Colonel (P6)	297	24 hours / 7 days a week
Plein 1992 (P7)	449	Monday – Sunday from 07:00 – 01:00
Bonnefantenmuseum (P8)	303	24 hours / 7 days a week
Sphinx (P+W)	500	Monday – Sunday from 07:00 – 24:00
Cabergerweg (P+W)	698	24 hours / 7 days a week
Stadspark/Kennedybrug (P+W)	416	24 hours / 7 days a week
Noorderbrug (P+W)	158	24 hours / 7 days a week
NS Station Maastricht (P+R)	175	24 hours / 7 days a week

1: Maastricht-bereikbaar.nl (2012)

2: Parkeren-Maastricht.nl (2012)



Location of off street parking structures and the P&R area on the left and the Park & Walk locations serving the central pedestrian area on the right.

D3 Drivers

The most important factor was the ability of the Public Private Partnership to maintain the economic viability of the overall contract working and concentrating on maintaining a dynamic functional aspect to the overall parking system and the relative fee scale. This positive attitude has enabled the city of Maastricht to have today an efficient and high quality accessibility system for all those arriving by car.

- Bannerman, L.A – Urban Dynamics, Public opinion and Parking. 14th EPA Congress Vienna., Austria – September 2009
- Martens, Peter – Director Q-Park – notes and correspondence Huub Smeets, Director Department of Urban Planning and Development - Extract from the Publication “En plein air – Maastricht stad van parken e pleinen, Maastricht 1999
- Website – Q-Park: www.q-park.nl, <http://www.maastrichtbereikbaar.nl/en/auto/parking>
- Website - The city of Maastricht : www.gementemaastricht.nl
- City plan and photographs- Laurence A. Bannerman: www.car-parking.eu/netherlands/maastricht, <http://www.gemeentemaastricht.nl/english/inhabitants/traffic-parking-public-transport/>

The transformation of Vreijthof – today the heart of Maastricht's public life.



Extended pedestrian areas and renewed piazzas in Torino

Country: Italy

City: Torino

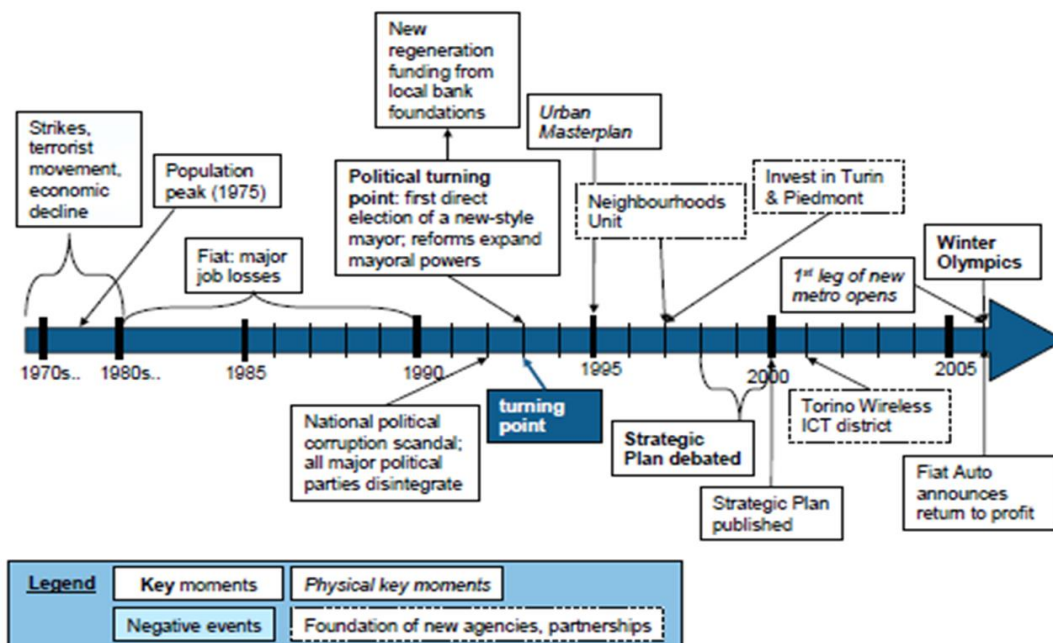
A1 Objectives

The overall strategies for parking in Torino is part of an overall planning document - The 1990 Urban Parking Plan, which has following three main objectives:

1. The creation of parking structures to eliminate on street parking and to restore streets and piazzas for pedestrian use;
2. The creation of parking availability on the border of the limited access area of the city centre;
3. The creation of parking structures to meet the demand from private residents.

A2 Description of the CS

The time line of the main events relevant to this case study is shown below.



The 1995 Urban Parking Plan approved in the context of the Urban Mobility Plan endorsed the following guidelines:

1. To facilitate public transport;
2. Accelerate private vehicle circulation;
3. Optimise the parking system;
4. Extend the cycle network;
5. Create innovative systems using information technology for mobility management.

Strategic Plan – The city of Torino planned recovery projects (the first Italian city to debate a strategic economic plan) that was prepared, by 1998, debated and approved in the year 2000:

- Inspired by the effectiveness of the strategic planning efforts of other European cities – PASCAL MARIGAL from Barcelona on the Scientific Committee;
- Established a 10 year road map;
- First result – awarded 2006 Olympic Winter Games that promoted Torino's new post industrial image internationally;
- Integrated the metropolitan area into the international system;
- Turning the ex-industrial city into a centre of education and research;
- Promoting Torino as a city of culture, tourism, commerce and sports;
- Improve the urban quality by upgrading the environment and the urban areas.

In the year 2006 Torino hosted the Winter Olympics. This special occasion contributed greatly to the urban transformation that has included the building of a new fully automatic subway line, new road connections, new parking areas, transformation of downtown piazzas into pedestrian areas, new architectural masterpieces, (Jeanne Nouvelle, Gae Aulenti, Renzo Piano, Arata Isozaki.).

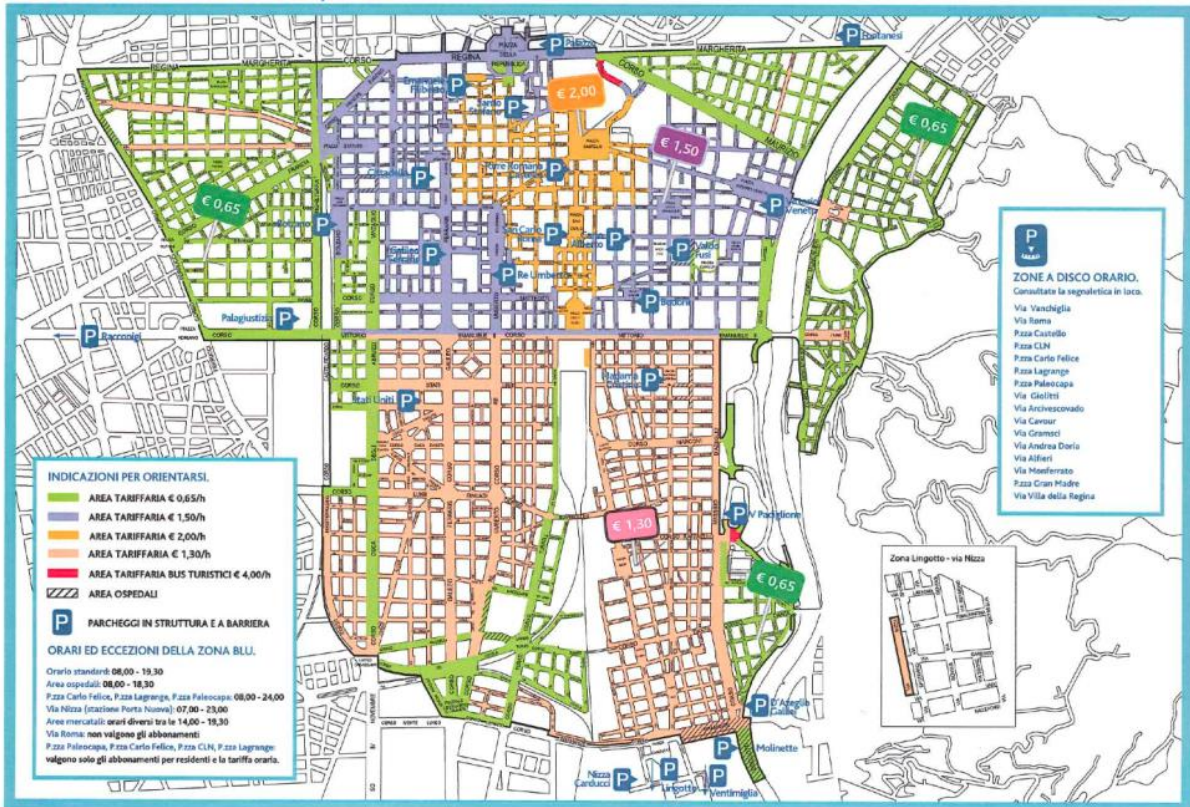
B Costs and who paid them

The whole parking operation was in a sense self-funding, as profits contributed to the financing of the building of the parking structures and the continuous development of the on-street parking sector. The overall parking supply consisting of almost 60,000 on street spaces and almost 9,500 off-street spaces required a progressive investment of roughly €133,500. The subsequent parking fees and the development of the continuous increase of parking spaces were the key elements in the process.

The Parking fees progression

	1997	2000	2001	2003	2007	2012	% increase in parking fees from 2000 to 2012
Zona 1	1.04	1.65	1.65	2	2	2.5	51.5%
Zona 2	0.52	0.83	0.82	1	1.3	1.5	80.7%
Zona 3	0.26	0.41	0.41	0.5	0.65	1.3	217.1%

Da € 0,65 a € 2,00 le nuove tariffe zona per zona.



The different tariff zones.

C Project objectives, indicators, data and impact/results

OBJECTIVE	INDICATOR	DATA USED	IMPACT/RESULTS
<i>Creation of parking structures to eliminate on street parking and restore street and piazzas for pedestrian use;</i>	<i>High Parking fees which all car-users have to pay</i>	<i>Monitoring the demand before and after the measure</i>	<i>The number of parking spaces has been decreased</i>
<i>Creation of parking availability on the border of the limited access area of the city centre;</i>	<i>Lower Parking fees which all car-users have to pay except residents with permits</i>	<i>Parking fee which all car-users have to pay</i>	<i>Increase in off-street parking supply</i>
<i>Creation of parking structures exclusively for the private resident's demand.</i>			

Even though the Winter Olympics took place in 2006, the parking plan was basically well consolidated and subsequently we can conclude that there were there not any major changes in framework conditions (e.g. local economy, politics) during the implementation period that were sufficiently consistent to have affected the impacts of the case study.

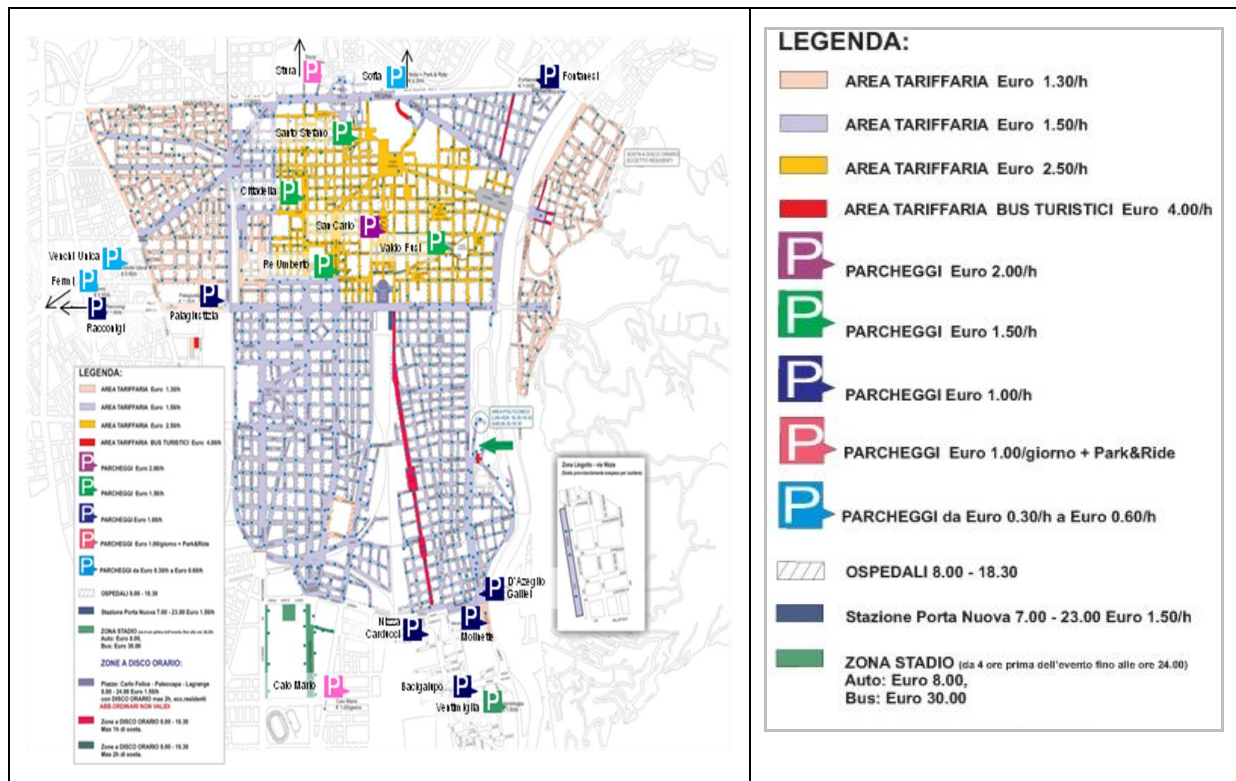
D Implementation process

D1. Stages

The case study was implemented in the following stages:

Increase in parking availability- 1994 to 2012

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2012
Parking places	9.861	12.400	20.292	23.477	26.729	41.439	44.979	49.700	51.462	56.794	56.794



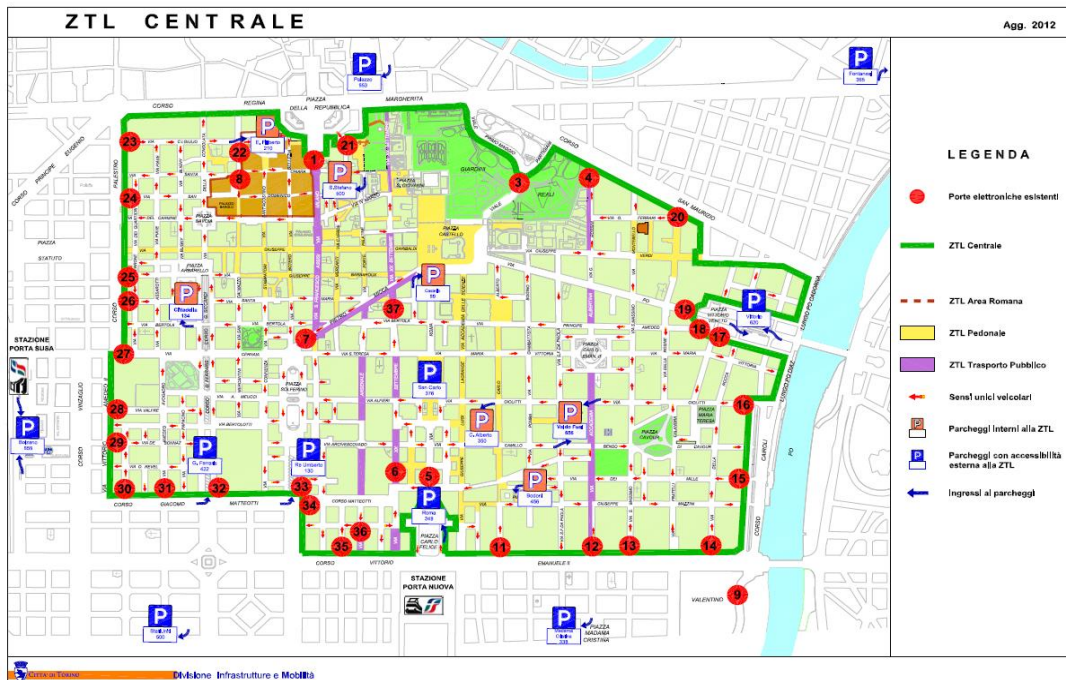
Central Torino indicating the different parking fee zones and corresponding parking fees in parking structures

D2 Barriers

The principal difficulty was the changing of the nature of the city. Up until the 1990's the City of Torino was primarily an industrial city being the centre of the Italian automobile industry dedicated to the Fiat motor company. The transformation process, in the context of a ten year plan required consistency and dedication involving collaboration of all local stakeholders including local authorities and the public and private companies involved in the social, cultural and economic transformation.

D3 Drivers

The recognition of being able to host the Olympic winter games was an important boost and confirmation of the direction taken in applying the transformation process foreseen in the strategic plan. In illustrating particular aspects of Torino, particular attention must be dedicated to the underground parking system that connects Piazza Carlo Felice, Via Roma, Piazza San Carlo e Piazza Castello. This is made up of 3 different parking structures that are connected and compose a system of 800 places that covers an overall distance of 900 metres and crosses the historical centre underground. This solution has enabled an important urban planning initiative to establish a lively and qualified pedestrian area where the traffic is subject to strong limitations.



The plan of the central ZTL area – the off limits zone to normal private vehicle transit, the indication of the electronic gates, (red dots), the pedestrian streets (yellow) and the public transport lines (violet). The blue parking signs indicate the structures whose access is external to the limited transit boundaries.

Torino is one of the best examples of an overall integrated parking management operation, which dates back to the first half of the 1990's.

- Bannerman, L.A – Urban Dynamics, Public opinion and Parking. 14th EPA Congress Vienna., Austria – September 2009
- The city of Torino website: http://www.visitorino.com/en/how_to_move_by_car.htm, www.car-parking.eu/italy/torino
- GTT website: www.gtt.to.it/cms/en/parking

The role of parking management in restructuring the downtown area in Lyon

Country: France

City: Lyon

A1 Objectives

In 1989, the city of Lyon initiated a redevelopment plan for the Presqu'île - the historic city centre lying between the Rhône and Saône rivers. This operation, named 'Plan Presqu'île' included:

- A full revision of the transport system;
- Measures to suppress transit traffic;
- Improvements to public spaces by creating wide pedestrian areas (streets and squares);
- Construction of underground car parks in order to free up above ground space.

In Lyon, parking has always been considered as a key element of mobility policy. Between 1990 and 1995, 4 underground car parks were built in the city centre, and 11 other car parks were built from 1995 to 2009 near the city centre. Another outstanding element of this program was the introduction of architecture and contemporary art in the car parks.

A2 Description of the CS

In 1998, Lyon was designated by UNESCO as a World Heritage Site – who stated, “Lyon is a prime example of a human settlement, an exceptional witness to enduring installations over more than two millennia”. Today's life in the historical centre is dynamic with many restaurants, shops, cultural and leisure sites. A centre that continues to move with the times, restore its buildings and which is mindful of the harmony of its squares, hills and rivers.

The agglomeration of Lyon is second only from Paris from a demographic and economic perspective. It has a population of 690,000 in the city and a population of 1,500,000 within 'Grand Lyon'.

Before recognition by UNESCO, Lyon in the 1990's was in a very critical situation. The period marked the peak of the crisis for commercial operators, with many shops closing. Excessive traffic seemed to be an integral part of the problem causing people to move away from the centre.

The City of Lyon was one of the French cities that activated an important urban renewal projects in the context of a European competitive strategy, namely:

- To become a biotech capital;
- To position its university amongst the top 30 in Europe;
- To continue ambitious urban development with quality projects;
- To further develop the tourist industry;
- To strengthen the financial and services systems.

Today the Presqu'île (Peninsula) is 800 metres wide and 3 km long. It contains a concentration of economic activity, a bustling shopping and business district with one of Europe's longest pedestrian streets – Rue de la République, containing banks, boutiques, department stores, cinemas, together with cafés and restaurants that enliven the area, as well as important cultural establishments including The Célestins Theatre, The Opera and The Museum of Fine Arts.

B Costs and who paid them

The total investment for the construction of car parks was 60 M€ (stage 1), with the average cost for one space being €25,000, Lyon Parc Auto (LPA) financed the whole investment. There was no European financing.

The scheme is a long-term BOT building-operate-transfer: LPA pays for all the expenses (building and operating) and operates the car parks for (usually) 30 years. The park is then given back (for free) to the local authority who then organizes a new tender. In this model, users who pay the parking fees finance the car park costs. In addition, a yearly fee, usually a percentage of the turnover is paid to the local authority.

The main drawback of this model is that the global economic balance is only predictable at constant conditions and the inevitable variations need constant monitoring involving both the public authorities and the concessionaires.

C Project objectives, indicators, data and impact/results

OBJECTIVE	DATA USED	IMPACT/RESULTS
<ul style="list-style-type: none"> • <i>Transforming the city into an international metropolitan area;</i> • <i>Developing tertiary service activities apart from the traditional productive functions?</i> • <i>Introducing commercial policies aimed at improving the overall image of the city and provide a better quality of life for residents.</i> 	<p><i>Counting cars before and after the measure; monitoring of the amount of parking tickets and shopping area revenue generated</i></p>	<ul style="list-style-type: none"> • <i>The commercial centre was restructured;</i> • <i>International ideas competition's for the requalification process were determined;</i> • <i>260 commercial activities were involved;</i>
<ul style="list-style-type: none"> • <i>Considering environmental values aimed at improving:</i> <ul style="list-style-type: none"> – <i>public space;</i> – <i>illumination;</i> – <i>water;</i> – <i>green;</i> – <i>parking in the central area.</i> 		<ul style="list-style-type: none"> • <i>4,200 underground parking spaces were planned and built from 1990 to 1994 (Stage 1).</i> • <i>8700 underground parking spaces were planned and built from 1995 – 2014 (Stage 2) spaces in</i> • <i>public transport was revitalised:</i> <ul style="list-style-type: none"> • <i>new bus lines</i> • <i>new tram lines</i> • <i>subway lines improved</i>

A survey of parking facilities conducted in 1999 by Lyon Parc Auto indicated:

- 20 – 30% of the visitors arrived from the metropolitan area;
- 30 – 40% came from the central part of the city;
- 30 – 50% were foreigners who came from outside the city up to 200km away.

In relation to the local economy, LPA's parking customers spent an average of €140 per visit and in certain areas on Saturdays, this value rose to € 200 a visit. This equates to around €240,000 a day during the week and € 600,000 on Saturdays- around €80,000,000 a year generated by parkers.

There were not any major changes in framework conditions (e.g. local economy, politics) during the implementation period that may have affected the impacts of the case study.

D Implementation process

D1. Stages

Stage 1: "Plan Presqu'île" (1990-1994);

Stage 2: Urban Mobility Scheme (1995-2014): 11 new underground car parks (8,700 spaces). During that time, 2 new tramway lines, 1 new metro line, bike-share program with more than 3,000 bikes (Velo'v).

D2 Barriers

From 2000, European regulations (i.e. compulsory tenders) are pulling prices and consequently the overall renowned quality of the LPA parking structures down ;

Growth in labour costs (35 hours work per week, increase in wages, etc.);

New rules and standards (e.g. disabled person accessibility, fire regulations, lifts regulations, etc.) increase overall costs.

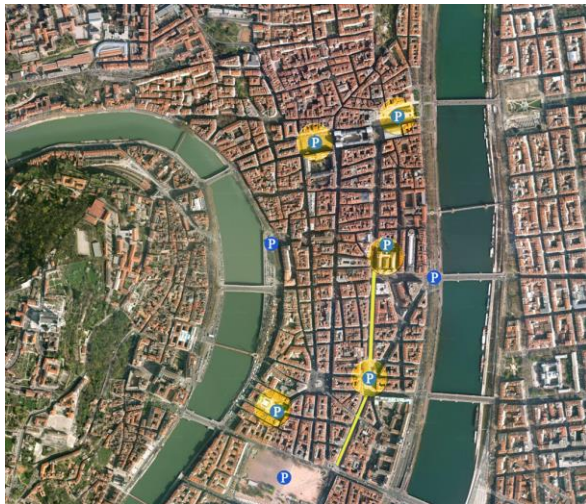
D3 Drivers

The main factor of success were:

- Collaborative working between local authority departments (City of Lyon, Grand Lyon);
- Support of the elected City of Lyon representative;
- Quality of and within car parks (artists, architects): which alleviates customers concerns when using the car parks.
 - Bannerman, L.A – Urban Dynamics, Public opinion and Parking. 14th EPA Congress Vienna., Austria – September 2009
 - Gindré, Francois – CEO L.P.A – notes and correspondence
 - Maubant Jean - Louis – La Ville, L'Arte & LA Voiture – Art/Edition et Art /Enterprise pour Lyon Parc Auto, 1995
 - Website - Lyon Parc Auto: www.lpa.fr
 - Website - The city of Lyon
 - City plan (graphic elaboration) - Laurence A. Bannerman
 - www.car-parking.eu/france/lyon

Images of the Lyon Park Auto activity.

The area of the restructuring operation of the Presqu'île



The new Place des Terreaux with underground parking structure



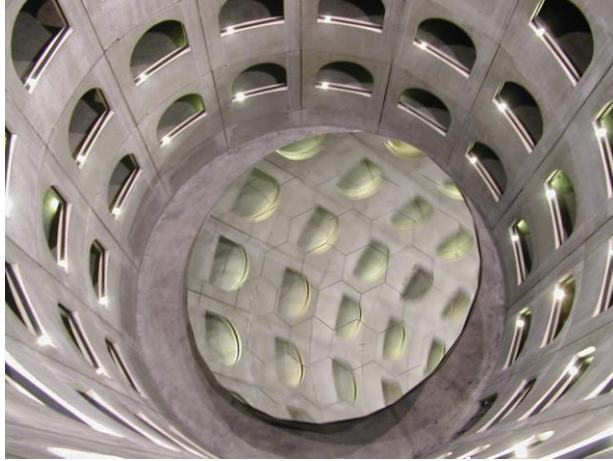
The new Place de la République with underground parking structure



Le Place des Celestins and underground parking structure with kaleidoscope



The kaleidoscope within the helical ramp of the Celestins underground parking structure



The underground car parks



for cars ...



and motor bikes.



The underground control room

The lift and stair wells and the first EPA Award (1994).



Urban renewal and the rational use of parking spaces in Barcelona

Country: Spain

City: Barcelona

A1 Objectives

To modernize the city by transforming the urban environment to reinforce commercial, economic and leisure activities in the city centre. Implementation of the Area Verde system that regulates the demand for private transport applying important parking fees combined with efficient controlling activities. The area verde model is an efficient alternative model to “electronic” congestion-combating measures implemented in other cities.

A2 Description of the CS

A summary of key statistics are presented below:

- 1.6 million residents
- 102 bus lines
- 1,065 buses
- 7 metro lines



Ciutat Veilla: Underground car parks containing 6,401 parking spaces.

- 102,6 Km
- 141 stations
- 165 trains
- 585,000 registered cars
- 214,000 motorcycles
- 83,000 mopeds
- 776.602 parking spaces
- 59.723 motorbike spaces
- 11.252 loading and unloading spaces

Changes in the layout and capacity of roads and pavements from 2003 – 2013

- Roads: reduction in the surface area from 56 to 50% area
- Pavements: increase in the surface area from 43 to 50% area
- 18% on-street parking
- 141,747 spaces (54.000 paid parking spaces)
- 82% off street parking
- 646,107 spaces (120.000 paid parking spaces)

In total 42% of all parking in Barcelona is paid or controlled.

B Costs and who paid them

The Barcelona urban renewal transformation followed the strategic plan developed in preparation for the 1992 Olympic Games. This event sparked a total transformation of the city and its economic development, which has generated continuous growth and development. The new mobility infrastructures have enabled a virtuous development enabling the generation of resources to progressively implement new metro lines, parking structures, pedestrian areas, bike sharing initiatives etc. The overall project is the result of economic resources generated by both public and private parking revenues. The overall investment by the city for the setting up of more than 54,000 paid parking on street spaces and 25,000 off street spaces in structures built directly by the city and the overall management system amounts to roughly € 650 million. The development process is dynamic and progressive and recently a public tender enabled the city contract out the management of 25 car parks in a public (40%) / private (60%) operation for all the parking structures serving the central area of Barcelona. The Public/private network enabled the city to obtain a financial contribution of €232million for a 25 year management concession.

C Project objectives, indicators, data and impact/results

OBJECTIVE	INDICATOR	DATA USED	IMPACT/RESULTS
<p><i>Create an integrated parking system of both on-street and off-street parking in order to satisfy overall mobility demand, by freeing up of inner city road space to enable the transformation of the inner city into a dynamic urban pedestrian space</i></p>	<p><i>Parking fee scale has been developed to condition the use, in a selected manner, of the private vehicle.</i></p> <p><i>The parking fees together with efficient controlling measures have enabled the realisation of a balanced co-mobility system.</i></p>	<p><i>Traffic counts during a monitored ten year period for modal split data</i></p>	<p><i>The number of on street parking spaces have been decreased to 18% of the total supply and the increase to 82% of the portion of the off street parking supply</i></p>
	<p><i>The modal split data and the extension of the pavement areas are the indicators of the effective results obtained</i></p>	<p><i>Statistical data indicating increase in tourist activities and the growth of the tourist industry</i></p>	<p><i>The urban mobility model has enabled the increase of pavement surfaces and streets with pedestrian priority</i></p>
	<p><i>Tourism</i></p>	<p><i>Geo-referenced data indicating the ratio between vehicle space and pedestrian space.</i></p>	<p><i>The tourist industry has doubled the presence of tourist over the last ten years</i></p>
			<p><i>The employment of dedicated staff in the tourist industry has more that doubled</i></p>
			<p><i>New soft mobility measures, (bike sharing) has been financed by the parking revenue (10 €/mil./yearly)</i></p>

Tourism (2003 – 2013)		
Tourists		3,8 → 7,6 million
Profile	40,9% 50,6% 8,5%	Congresses/fairs Holidays Other
Origin	73% 27%	Europe Rest of World
Accommodation		37,2 → 72,8 Thousand beds
Tourist activities	+ 13%	Hotels, restaurants, travel agencies, etc
Workers employed	+ 130%	51,6 → 120 thousand

Of particular political, social and economical interest is the positive employment enabling aspect generated by the renewal scheme.

There have been major changes in framework conditions in relation to the local economy and political governance that have affected the impacts of the case study. However, the overall structure and integrated systems approach of the Barcelona model have enabled the overall integrated structure to withstand and in certain cases to continue its development and economic feasibility.

D Implementation process

An important aspect of the implementation process was the implementation of the 1998 Mobility Pact. This innovative process involved a forum of public participation involving public institutions, experts, associations and stakeholder representatives. The objective was to establish strategies and actions concentrating on the quality of public services, road safety and the promotion of cycling with the intention to reduce traffic in the central area improve the urban quality and revitalise the centre. This ongoing process implemented promotional activity in schools and offices, promotional activity for the use of the public transport, the reorganisation of the parking plan (Area Verde) and the strategic plan for the bicycles (2006). The intention behind the Area Verde system was to reduce the number of trips made to the

city centre in private vehicles. The system was not based on a congestion charge, as in London, but rather on the application of tariffs to all parking in the city centre.

D1. Stages

The case study was implemented in the following stages:

- **Stage 1:** **1983** – The first 281 blue parking spaces
- **Stage 2:** **1992:** - The Olympic Games
- **Stage 3:** **1998** - The mobility pact
- **2000 – 2004** – Proposal to alter the trend of increasing volumes by comprehensively regulating parking spaces in center city.
- **Stage 4:** **2001** – The introduction of short stay spaces and regulation loading and unloading spaces in Ciutat Veilla e Eixample
- **Stage 5:** **2005** – The new Area Verde regulation of 7000 high demand parking spaces
- **Stage 6:** **2006 – 2012** - the new urban mobility plan 2006 – 2012
- **Stage 7:** **2007** - The introduction of biking
- **Stage 8:** **2013** - Over 54,000 blu spaces and green spaces, 11,000 loading and unloading spaces, 55,000 motor cycle spaces

D2 Barriers

The introduction of a complete change in the way public space was useable was the cause of continuous interaction between the operators, the politicians and the residents and stakeholders. Having a base line reference to the decision making process in the Mobility Pact there was a good consensus on the initiatives, but it had to be shared and the time factor tended to dilute the processes.

D3 Drivers

The Mobility Pact on the one hand and the planning and management intelligence that constantly developed, fine tuned and implemented the operation were key to success. Another success factor relates to the fact that the parking policy is placed at the centre of the urban mobility policy and parking is seen as a service to clients who are the motorists.

- Bannerman, L.A – Urban Dynamics, Public opinion and Parking. 14th EPA Congress Vienna., Austria – September 2009
- Roig i Alegre, Antoni – Parking Planning & Management – cruising for parking. 15th: www.car-parking.eu/spain/barcelona, <http://www.bsmsa.cat/activitats/mobilitat/#>
- EPA Congress Torino, Italy – September 2011
- The city of Barcelona www.bcn.cat website: www.bcn.cat/estadistica/angles/index.htm

Photographs and images – Laurence A. Bannerman:
<http://www.areaverda.cat/en/mages of the Ciutat Veilla – Barcelona>



Fast extension of controlled on-street parking in Ljubljana

Country: Slovenia

City: Ljubljana

A1 Objectives

Implementation of parking management measures such as continuous extensions of controlled on-street parking is now part of the new Sustainable transport policy of the Municipality of Ljubljana (2012) where parking management plays an important role in achieving sustainable transport objectives. Parking policy in Ljubljana became more comprehensive after the introduction of SUMP; however some elements, e.g. monitoring and evaluation of parking measures, are still missing. Before the introduction of the SUMP, the municipality used parking management reactively in order to solve problems with on-street parking. The largest problem was for residents trying find a parking place in areas that also offered free long-term parking by daily commuters.

A2 Description of the CS

Ljubljana is the capital of Slovenia with 290,000 inhabitants. As a capital and University City it attracts a lot of daily migrants – more than 100,000, 90 % of them travel by car (data for 2010).

The first on-street parking controls were introduced in year 1971 on some streets in city centre. This gradually expanded with the main push in the last 10 years. In year 2006 there were 2164 controlled on-street parking places in an area about 700 m in diameter around the city centre. This is now zone 1 with highest prices and strictest time regulation (max. 2 or 4 hours). Before the regulation it was difficult for residents to park, because daily commuters and visitors occupied most free parking spaces. After regulation residents can buy a yearly permit and non-residents who want to park must buy a ticket. The maximum length of stay for non-residents is 2 or 4 hours depending on the area. Parking is controlled from 8:00–19:00 on weekdays and 8:00–13:00 on Saturdays. In 2012 controlled on-street parking expanded to other, less central parts of the city – zone 2 and 3 - with a less strict regime.

Parking regulation is done by a public company JP LPT whose owner is Ljubljana municipality. The company carries out activities related to the obligatory commercial public service of the maintenance and cleaning of public parking facilities based on the Decree on Public Parking Facilities Management (Official Journal of the Republic of Slovenia, No. 48/2011).

A large part of the “new” on-street parking spaces were created with the conversion of two ways into one way streets. This was done simultaneously with the parking regulation. On some streets the new space was also used to accommodate a cycle path.

As mentioned above, Ljubljana is now divided in three parking zones. The spatial distribution of parking zones in Ljubljana is shown in Figure 1.

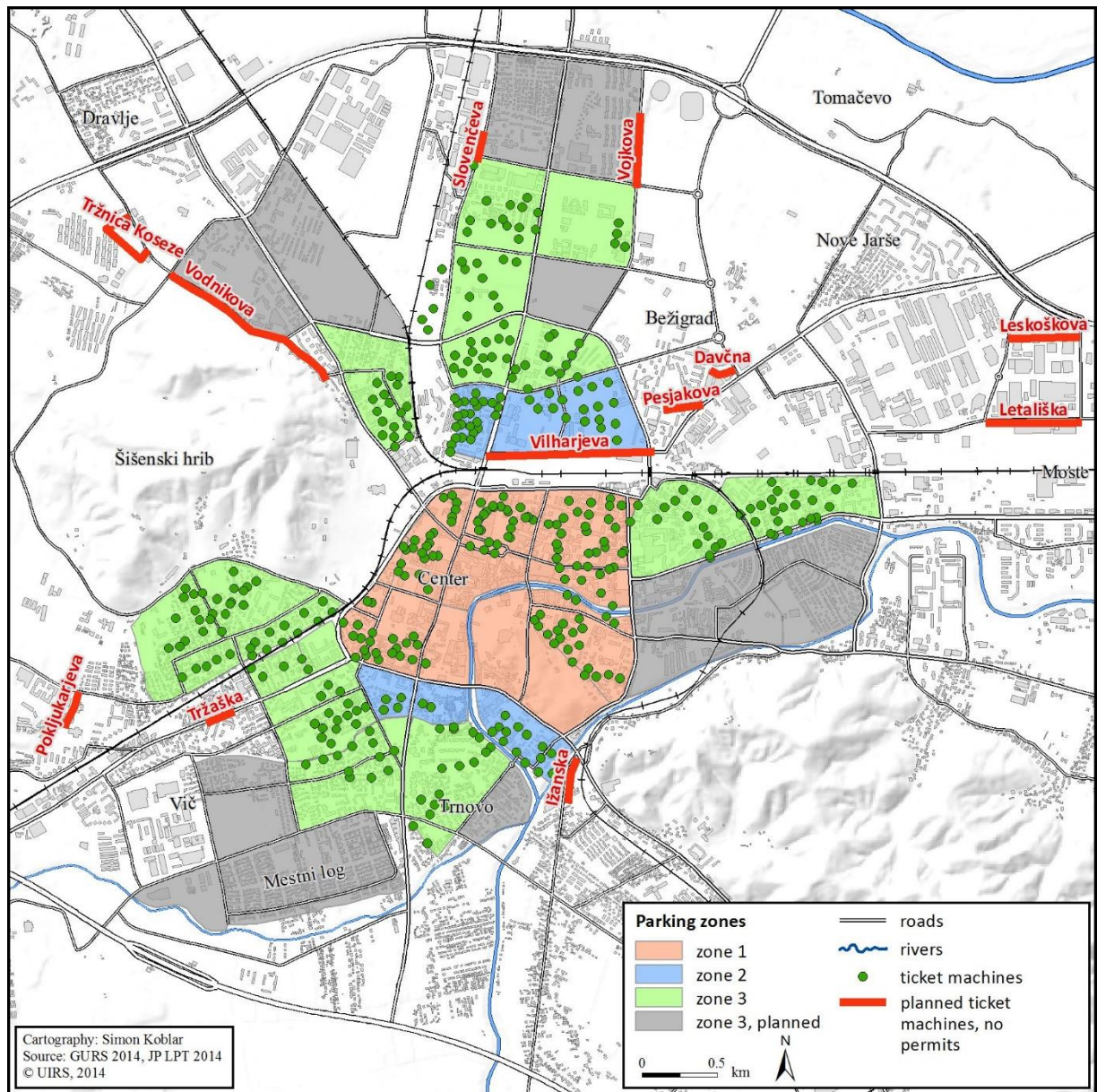


Figure 1: Parking zones in Ljubljana

Prices and maximum allowed time in different zones are shown and described in Table 1.

Table 1: Parking zones in Ljubljana

Zone	Price (€/h)	Max. time (hours)	Operating time	Yearly permit for residents (€/annually)	Who can buy a permit	No. of parking places (2014)	No. of ticket machines (2014)	No. of yearly permits (8. 2014)
1	0.70	2 or 4 depending on the location	Mo.-Fri. 8:00–19:00 Sat. 8:00–13:00	1. permit: 100	Only residents with permanent address	2357	127	1878
2	0.50	6	Mo.-Fri. 7:00–17:00	1. permit: 100 2. permit: 200	All residents	1149	66	548
3	0.40	10	Mo.-Fri. 7:00–17:00	1. permit: 60 2. permit: 120 3. permit: 180	All residents	3134	202	1290

B Costs and who paid them

One ticket machine costs 4500 € including VAT, so with 395 ticketing machines in total this sums to around 1.8 million €. The expansion of parking regulations was done gradually, so the income from parking charges was used to buy new ticket machines to expand the controlled on-street parking zone. In addition to the ticket machines there is also a centre for managing and controlling the system. The cost of this centre was 43,200 €. This includes maintenance of the centre for 4 years. Data on the costs of changing signage and paint was not available. Monthly maintenance of one ticket machine costs 6 €, totalling 2370 € a month for 395 machines.

In the year 2012 the company collected 1.4 million € from on-street parking. Data on the total operating costs for enforcing on-street parking zones was not available. Company JP LPT had more than 160 employees in 2012 and almost 14 million € income (mainly from other activities such as managing main market place and from off-street parking charges), out of which 650,000 was net profit. In the first half of the year 2013 income from parking was lower than in 2012 due to the economic crisis, despite the introduction of new regulated parking zones.

C Project objectives, indicators, data and impact/results

The introduction of controlled parking zones in Ljubljana was an ad-hoc project without strategy, objectives or monitoring. Therefore the only available data is income from parking charges and costs of investments and maintenance of the controlled parking zones. Data on the performance of parking zones e.g. occupancy of parking spaces or length of stay has not been collected systematically.

After the first stage in 2006, the 2008 financial crisis had an impact on less parking in city centre, especially after 2011. In 2012 subsidized PT tickets for students were introduced. As a result, fewer students now travel to Ljubljana by car, which has an impact on less parking around colleges and campuses.

D Implementation process

D1. Stages

The CS was implemented in following stages:

Stage 1: First on-street parking controls were implemented until year 2006 in city centre with 2164 parking places at that time. This was in the area about 700 m in diameter around city centre. This area is parking zone 1 with highest prices and strict time regulation (max. 2 or 4 hours).

Stage 2: year 2012 - 205 new ticket machines in areas around the city centre and some high density residential areas. This was done as a result of high parking over-spill from the controlled city centre into the surrounding areas. Some of these areas are in parking zone 2 and some in zone 3.

Stage 3: year 2014: 70 ticket machines in mostly residential areas. The ticket machines entered service in January. These areas are 1–2 km from the city centre and are all in zone 3. After this stage a total of 6640 on street parking spaces were available in all three zones.

Stage 4: year 2014: 53 new ticket machines are planned in residential areas in zone 3. More controlled parking zones are planned in the future including some streets around major traffic generators (e.g. schools, bigger employers) with only limited time parking and with no permits for residents (see figure 2).

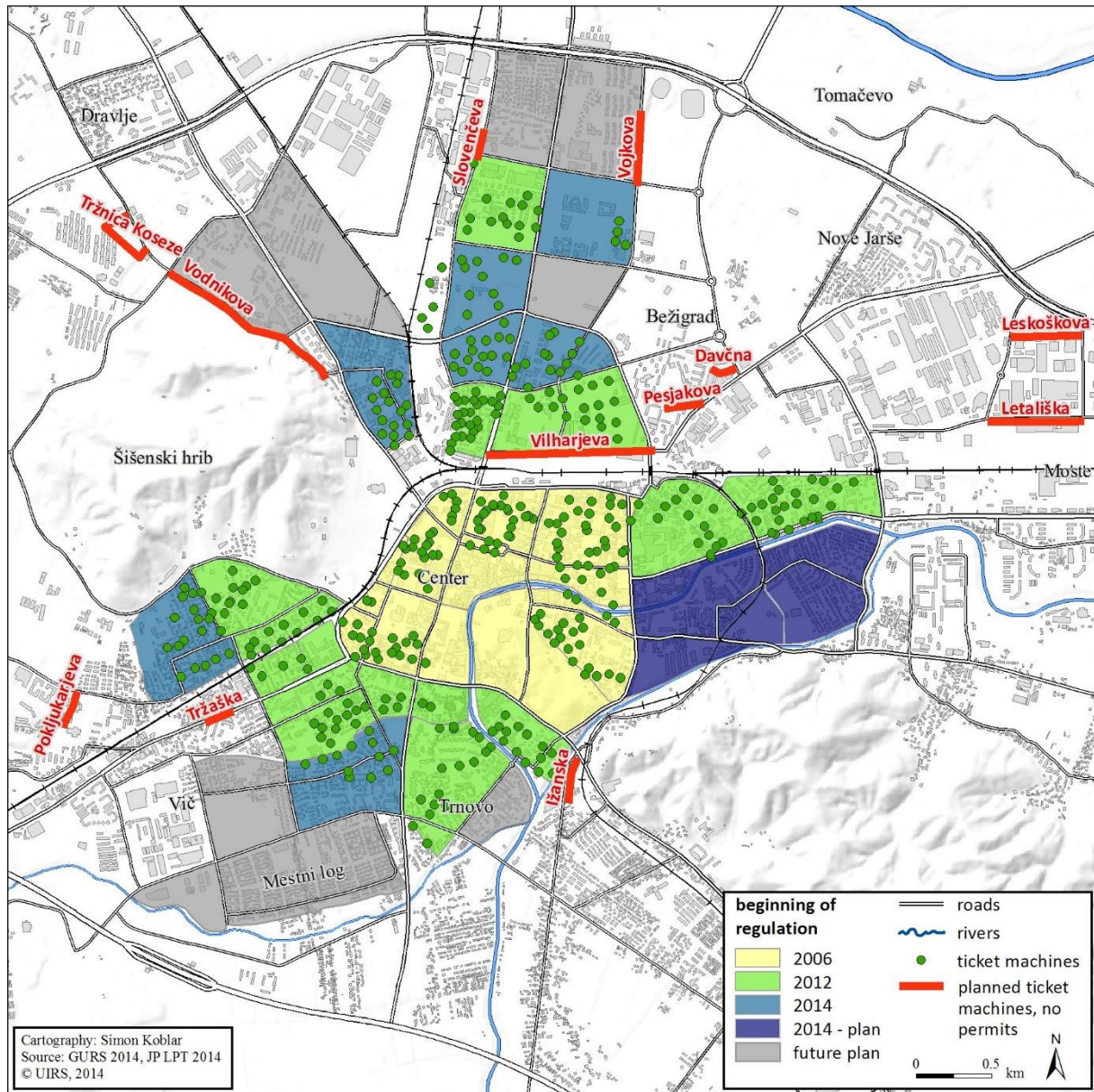


Figure 2: Implementation stages

D2 Barriers

There were some difficulties with residents and visitors that were opposed to controlled parking. Initially, the public perception was that controlled parking had been introduced only to supplement the municipal budget. There was also some vandalism involved (see photo on next page).

On the other hand, as the parking zones expanded, more and more people, mainly residents became supportive of regulations, mainly because they are aware of their positive effects.

Implementation was slowed down for some years because of difficulties with tenders for new ticket machines.



Figure 3: Destroyed ticket machine

D3 Drivers

The main driver for the very speedy extension of controlled on-street parking was strong political support from the current mayor and increasing support and demand from residents as those outside the zone saw how those within were enjoying much easier access to parking.

This report is based on the interview with the JP LPT company representative Ms. Darja Pungečar, data made available by the company and news articles:

- <http://www.24ur.com/v-ljubljani-se-vec-parkomatov-in-drazje-parkiranje.html>
- <http://www.delo.si/novice/ljubljana/od-sobote-se-vec-placljivega-parkiranja.html>
- <http://www.lpt.si/uploads/cms/file/Zemljevid%20-%20CON.pdf>
- <http://www.lpt.si/web.php?page=222&preview=on>
- <http://www.ljubljana.si/si/zivljenje-v-ljubljani/v-srediscu/67747/detail.html>
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- <http://www.delo.si/novice/slovenija/dodatnih-parkomatov-se-ne-bo.html>

The Amsterdam Mobility Fund**Country:** Netherland**City:** Amsterdam

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PUSH&PULL has taken this paper directly as it was from the author as the consortium believes that this summary gives the needed information in way that, if re-written or shortened it wouldn't be improved.



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