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Measure Evaluation Results

UTR 6.4 Parking facilities for bicycles in the city centre

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Measure title:	Parking facilities for bicycles				
City:	Utrecht	Project:	Mimosa	Measure number:	6.4

Executive Summary

Biking is already a popular transport mode for short trips in Utrecht. The city of Utrecht however wants to increase bicycle use further. The insufficient amount of cycle parking facilities is an obstacle to encourage 'new cyclists' to switch from car to bicycle. Additional offers of parking places are required for people to travel by bicycle. Some prefer unguarded facilities, while others prefer a place that is guarded thus preventing the loss of or damage to the bicycle. Utrecht has worked on an integrated action plan for bicycle parking. This plan specifically focuses on the city centre and aims to increase the number of parking places in the city centre by 2013. This plan is part of CIVITAS MIMOSA.

The MIMOSA measure 'Parking facilities for bicycles in the city centre' sought a result whereby at least 60% of all trips of up to 7.5 kilometres from and to the city would be done by bicycle. The objective of the measure is to increase the availability of bicycle parking facilities in the city centre thereby stimulating the use of bicycles. It should be noted that bicycle parking is not a stand-alone activity that could lead to this result; however it is an important influencing element.

The measure was implemented through the following stages and activities:

Stage 1: More efficient bicycle parking racks (2009-2012) new bicycle racks were installed: some replaced old bicycle racks and existing type of bicycle racks, others were installed in new locations. The installed bicycle racks have a better spatial efficiency than old racks.

Stage 2: Portable bicycle parking facilities (first city in the Netherlands to implement this type of facility) (2009-2011) A guarded portable parking facility was installed at the 'Mariaplaats' (Maria square). This portable parking concept works with a special trailer transporting specially designed bicycle racks. These racks can be placed in the public area easily and in about 15 minutes hundreds of parking places are made available. One trailer carries racks for 300 bicycle parking places. This concept was expanded to two other 'hotspot' locations in the city.

Stage 3: Off-street guarded parking facilities (2009-2011) One guarded facility was installed: a parking facility 'Wijk C/Lange Koestraatstalling' (150 places), and an underground facility 'Vredenburg' will open in Spring 2013 (800 places).

Stage 4: Measure to influence cyclists' behaviour (2009-2012) Several actions were undertaken to encourage the shift to bicycles: a common design of and signposting for bicycle parking facilities; free placement of bicycles in the public guarded bicycle facilities (on the first day), and organization of a communication campaign to increase the awareness on bicycle parking facilities.

Stage 5: Improvement of the usage, and levels of usage of the bicycle parking facilities (2009-2012) From 2011 the removal of bicycles occupying racks for a very long time started. The enforcement consists of the removal of bicycles that are parked for more than 28 days. Most of the time they are left by their owner and no longer used (also called 'orphan' bikes). The 'orphan' bikes action led to 431 free parking places.

The evaluation of this measure was conducted by measuring the number of different kind of bicycle parking places and the average percentage of Utrecht residents that go to the city centre by bike. Thereby, three positive **key results** of the measure came out from the evaluation. First, the measure did not contribute to add extra guarded parking places compared to the initial situation but prevented a decrease of 500 guarded parking places. Secondly, the measure added 438 extra parking places in the public area. This is an increase of 9% compared to the business-as-usual scenario. Thirdly, during the CIVITAS MIMOSA period the percentage of Utrecht residents that usually go to the city centre by bike grew by 4% from 51% to 55%.

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The final contribution of the implemented measures to the wider envisaged change in the modal split towards cycling in Utrecht is at this stage unknown; the Action Plan is still running for another year and other stimulation programmes have also yet to finish. The link between the modal split (bicycle usage) and the availability of parking places is also difficult to make. It is clear (also from other research) that safe parking for bicycles (to prevent stealing) is a precondition.

Two main **barriers** were encountered in implementing the measures. The first barrier was due to some opposition from residents and entrepreneurs against the location of portable parking facilities and bicycle racks, as they preferred alternative ways of arranging public space or did not want to have bicycle racks in front of their house/shop. The second barrier was due to the difficulty to find enough suitable places in the city centre to set up portable bicycle parking.

The measure was pushed by the following main **drivers**. First, bicycle parking is an urgent issue in Utrecht, due to the general lack of sufficient and well-placed bicycle parking space; this makes it easier to have the measure implemented as it can solve this urgent situation. Because of the increasing problems with bicycle parking in the city centre, some of the projects had already started while awaiting Council approval. Another driver is the political willingness and support to promote bicycle use in Utrecht: the new council program focuses on the stimulation of bicycle use and bicycle parking.

From the implementation and evaluation of this measure four issues are **recommended**. First a priority should be given to bicycle parking over car parking: it is recommended that cities who are trying to expand bicycle racks in the city centre try to make a connection in their program between car parking and bicycle parking. This will make it easier to expand the number of bicycle racks in the city centre and at the same time reduce the number of parking places for cars, stimulating car users to change modality. Secondly these bicycle racks should be protected: Although there are strict regulations and rules about adding and removing parking lots for cars, there is no such thing set up for bicycle racks (yet). It is recommended that regulations and rules for adding and removing bicycle racks are set up prior to implementing a bicycle parking program. Thirdly, it is recommended to elaborate an integrated action plan with different ways to achieve more available bicycle parking places. An integrated plan which has political approval makes actions easier. Finally, it is highly recommended to include residents and entrepreneurs at potential bicycle parking locations early in the process and to consider their objections, so delays in implementation can be prevented.

The success of the 'Parking facilities for bicycles' measure is clearly highlighted by the positive evaluation results. Furthermore the innovative concept of portable parking facilities received great recognition which encourages putting extra portable bicycle parking locations into operation. The implementation of the MIMOSA measure fostered political willingness to give priority to cycling in Utrecht in accordance with the citizens' requests.

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A Introduction

A1 Objectives

The measure objectives are:

High level objectives:

- Increase modal split towards sustainable modes.

Strategic level objectives:

- Increase the use of bicycles for trips of up to 7.5 km to and in the city centre by providing a variety of bicycle parking facilities.

Measure level specific objectives:

- Increase the availability of bicycle parking facilities in the city centre.

A2 Description

The bicycle is already a popular transport mode for short trips in Utrecht. The city of Utrecht however wants to increase bicycle use further. With this measure we wanted to achieve a situation whereby at least 60% of all trips of up to 7.5 kilometres from and to the city are done by bicycle. The objective of the measure is to increase the availability of bicycle parking facilities in the city centre thereby stimulating the use of bicycles. It should be noted that bicycle parking is not a stand-alone activity that could lead to these results; however it is an important influencing element. Without sufficient cycle parking facilities there will be little incentive for 'new cyclists' to switch from car to bicycle.

A variety of parking places is required for people to travel by bicycle. Some prefer unguarded facilities, while others prefer a place that is guarded preventing the loss of or damage to the bicycle. Most bicycles are parked near the central train station and the city centre nearby; a lot of residents go to the station by bike and take a train to some further destination while a lot of visitors from outside Utrecht arrive by train and go further by bike to destinations in the city.

In 2008 there were about 6,500 public parking places and about 7,600 guarded parking places for bicycles in the station area and an additional 5,200 public and 890 guarded parking places (Stadhuisstalling and Singelborghstalling) in the city centre. This makes about 20,190 available bicycle parking places in the entire area. This does not include private parking places of companies or offices that are only accessible to their employees, as these are not freely accessible for all residents.

The guarded parking places in the city are operated by the national railway company NS (Nederlandse Spoorwegen: about 4,900 places), the municipality (about 2,390 places) and other small private companies (about 1,200 places). In the city centre there is already a shortage of places for parking bicycles. From counting in 2008 we know that in the station area there was a shortage of at least 3,400 parking places and in the rest of the city centre of about 3,800 places (counting bicycles outside racks). Because of the growth in the number of citizens due to the building of Leidsche Rijn (90,000 more residents) and the redevelopment of the station area, Utrecht is working on one integrated action plan for bicycle parking. This plan specifically

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focuses on the city centre and aims to increase the number of parking places in the city centre in 2013. This plan is part of the CIVITAS MIMOSA measure and aimed to:

- Implement guarded parking places for at least 2,950 bicycles;
- Implement parking places for at least 435 bicycles in the public area ;
- Implement one portable/temporary guarded facility for bicycle parking during busy shopping days (Saturdays) and large events in the city centre;
- Additional measures like the removal of bicycles that are parked for a longer period or that are broken;
- Improve currently used parking material;
- Introduce free guarded parking facilities for bicycles.

It is however clear that these steps were not enough to solve the shortage, therefore the plan to increase parking places after 2012 continues. After the implementation of this measure we know what kinds of parking places are successful and what kind aren't.

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B Measure Implementation

B1 Innovative aspects

The innovative aspects of the measure are:

- **New conceptual approach** - The action plan approaches the bicycle parking issue out of an overall perspective. It will contain some experiments with free guarded places, portable guarded places, parking places for new kinds of bicycles like the 'carrier bike' and some new material for parking places for bicycles.

B2 Research and Technology Development

An action plan for parking facilities for bicycles in the city centre has been developed. The action plan contains plans for 3,500 extra parking places, introducing new forms of parking, such as temporary parking places and additional facilities like free guarded parking places and actions such as the removal of bicycles which aren't parked properly. This plan resulted in deliverable D6.4.2, which described the different measures to improve the bicycle parking situation. Subsequently the city council has made funds available for implementation. After implementation each measure was tested through implementation and subsequent evaluation. The results of this evaluation were reported in deliverable D6.4.5. and in the underlying report in section B4 and C2.

B3 Situation before CIVITAS

The bicycle is a popular means of transport in the Netherlands and also in Utrecht. On an average working day almost 66,000 cyclists enter or leave the city centre (2008). For trips up to 7.5 km that start in Utrecht 38% of the people cycle (KiM, 2007). Although several guarded and unguarded places are available many bicycles are parked outside of the designated parking places, blocking the entrance or passage through certain squares and roads, sometimes creating dangerous situations. This irregular parking is caused in most cases by a lack of parking places, poor distribution of parking places, peak hours, and enforcement.

As said before in 2008 there were about 20,100 parking places for bicycles in the city centre (including the station area), however on a regular day there were 7,200 bicycles counted parked outside racks in the public area.

The problem was exacerbated by the recent closing of some of the guarded facilities due to the construction works in the city centre, for instance the 'Vredenburgstalling'. It is predicted that the number of parked bicycles will grow in the future as the population of Utrecht is growing due to the building of new neighbourhoods in the suburbs (Leidsche Rijn) and the growing number of students in the city.

Before 2008, there were already some measures implemented (like the placement of some new parking facilities), but these were insufficient to solve all parking issues and absorb the additional demand expected in the coming years. Innovative solutions or combinations were needed to come to a more durable solution. This CIVITAS MIMOSA measure aims to achieve this by the development of an action plan and implementation of parking facilities for bicycles.

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B4 Actual implementation of the measure

The measure was implemented in the following stages:

Stage 1: More efficient bicycle parking racks (2009-2012)-

- a. Placement of new more efficient bicycle racks when replacing old bicycle racks;
- b. Placement of bicycle parking racks in new locations;
- c. Replacement of an existing type of bicycle racks (fietsnietjes) with more efficient bicycle racks where possible;
- d. No new placement of the 'fietsnietjes' type, as their spatial efficiency is considered low.

Action	Planned number of extra parking places	Achieved number of extra parking places
a. More efficient racks when replacing old racks	300	184
b. Bicycle racks in new locations	435	230
c. Replacing 'fietsnietjes' with more efficient racks	150	24

Source: Effect report Civitas Mimosa, Action plan parking facilities for bicycles, City of Utrecht, team Environment & mobility (2012)

As shown in the table above the actions did not result in as many extra parking places as planned. There were different reasons for this: new efficient racks were more expensive than planned so less racks could be placed with the available budget (a), in practice less locations were suitable for placing bicycle racks than thought before due to for instance safety reasons (b) and replacing old racks only happens when the area or street is redesigned as doing this as planned one by one a year is too expensive (c). When replacing 'fietsnietjes' the profit for extra parking places is relatively low as these 'fietsnietjes' are spread through the city in small numbers (some times only 2 at a place) and there's not much space for more parking places.

For most actions the results aren't final yet, as for instance in the future it is thought to be possible to replace more racks, to attain new parking places by replacing car parking places on the street with bicycle parking and when redesigning public areas, parking racks will still be replaced by more efficient ones.

From 2009 until 2012 in total 208 extra bicycle parking places were made available by changing the old racks for more efficient ones. To increase the number of parking places the municipality added 230 extra racks in the city centre at the edges of the shopping area. In total 438 extra bicycles parking places were produced and it is predicted that this number will grow during 2013.

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Stage 2: Portable bicycle parking facilities (first city in the Netherlands to implement this type of facility) (2009-2011) -

- a. Implementation of a guarded portable parking facility at the 'Mariaplaats' (Maria square);
- b. Expansion of the portable bicycle parking facility to 2 other 'hotspot' locations in the city.

During inspections and counts in the city centre 'hotspots' were located. These hotspots are characterised by very high number of parked bicycles at specific times during the week (weekends and shopping nights). As it was not possible to place enough racks in these places to meet demand it was decided, following the city of Brugge (Belgium), to test portable parking places.

The portable parking concept works with a special trailer transporting specially designed bicycle racks. These racks can be placed in the public area easily and in about 15 minutes hundreds of parking places are made available. One trailer carries racks for 300 bicycle parking places.

It was decided to place the first portable parking place at the 'Mariaplaats', a small square in the city centre near an important bicycle route and near the shopping pedestrian area. Another asset was that not many changes were necessary in the public area.

In contrast to the test in Belgium, where the portable parking was unguarded and placed for several days, in Utrecht it was decided not only to offer extra parking places but also more quality. Therefore the portable parking places are free and guarded. The racks are erected in the morning and removed in the evening, as they appear only to be necessary during the day for shoppers and not in the evening or night.

Figure 1 Portable bicycle parking trailer and location in the city centre



From September 2009 every Saturday a portable parking place was erected at Mariaplaats with about 100 parking spaces. Since 2010 the number of users has grown. Every Saturday the parking place is used by 250 to 350 cyclists. Therefore it was decided to extend the parking by 150 parking places.

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Table 2. Actions and resulting number of bicycle parking places

Action	Planned number of extra parking places	Achieved number of extra parking places
a. Guarded portable parking place Mariaplaats	200	100-200
b. Enlargement of portable bicycle parking	800	600

Source: Effect report Civitas Mimosa, Action plan parking facilities for bicycles, City of Utrecht, department of parking (2012)

In 2010 the test on Mariaplaats was evaluated through parking counting and a customer satisfaction survey. These results were promising and it was decided to expand the portable parking concept and to search for new locations. Three locations in the city centre turned out to be suitable for the portable parking concept and in need of extra bicycle parking places. As it was not planned to expand in three locations, it was decided to obtain another trailer. With this the potential for portable places grew from 300 to 600 parking places.

Since November 2011 portable parking places are available in three locations in the city centre: Mariaplaats, Janskerkhof and Neude. Each location was started with 100 parking places in racks (at Neude there is also free space for special bicycles that need more space like carrier bikes, so this offers more than 100 places). In the different locations extra racks are placed 6 times a week, which makes the capacity about 600 parking places. From occupancy counting it was decided to expand the parking place at Neude permanently to 200 as during peak hours this was used every day by about 450 to 550 bicycles (see table 3 for average usage).

Table 3. Average number of parked bicycles portable parking Neude

	number of parked bicycles	number of days implemented/month	average number of bikes/day
Nov 2011	2338	10	239
Dec 2011	847	4	212
Jan 2012	1705	7	243
Feb 2012	2686	13	206
March 2012	2171	7	310
Apr 2012	2237	6	373
May 2012	0	0	0
June 2012	3834	10	383

Source: Management rapportages fietsenstallingen; U-stal Holding BV, nov 2011 t/m juni 2012

* due to large events in the Neude it was not possible to erect the portable bicycle parking in May 2012

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Stage 3: Off-street guarded parking facilities (2009-2011)-

- a. Implementation of a guarded parking facility 'Wijk C/ Lange Koestraatstalling';
- b. Planned implementation guarded underground facility 'Vredenburg'.

In 2007 a well-used guarded parking place in the city centre was closed because of construction works. At the end of 2008 there was only one roofed guarded parking place in the city centre, offering 377 parking places. Therefore it was decided to rent a basement, near the closed parking facility. This basement was redesigned for bicycle parking and has a capacity of 150 racks and some places for bicycles that don't fit in the racks (carrier bikes, bikes with large baskets). At first this guarded bicycle park was not used much, as the entrance was in a backstreet. Signs were placed and as of August 2012 this is now a well-used parking place.

At the same time there were negotiations with the University of Utrecht about the implementation of an underground bicycle park at Janskerkhof for students, employees of the university and for the public. This would offer 700 to 1400 extra public parking places. In 2010 however the university decided to set up a parking place on their private grounds and stopped negotiations. So these planned extra public places were not produced. In September 2012 the University of Utrecht opened its own underground bicycle parking place for students and employees. This could have an influence on the number of bicycles parked on the street in this area. However in the number used in this evaluation this is not included as counting was completed before the opening of this private parking place.

The last planned off-street parking place is the guarded parking place 'Vredenburg', beneath the new shopping and music building (MIMOSA measure UTR 7.1 Construction logistics). In this parking place about 800 parking places were planned. However as a result of delayed construction works this parking facility has yet to open. Opening is now planned for spring 2013.

Action	Planned number of extra parking places	Achieved number of extra parking places
a. guarded parking facility 'Wijk C/ Lange Koestraatstalling'	150	150
b. guarded bicycle facility 'Janskerkhof'	700-1400	0
c. guarded underground facility 'Vredenburg'	800	Opens April 2013

Source: Effect report Civitas Mimosa, Action plan parking facilities for bicycles, City of Utrecht, department of parking (2012)

In total 150 new guarded off-street bicycle parking places were produced, another 800 are expected early in 2013.

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Stage 4: Measure to influence cyclists' behaviour (2009-2012) -

- Improvement of the sign posting of and common design of bicycle parking facilities;
- Free placement of bicycles in the public guarded bicycle facilities (on the first day);
- A communication campaign to increase awareness of bicycle parking facilities.

Different measures were implemented to stimulate the occupation of parking facilities and bicycle usage. From interviews and information from cyclists it appeared that people were unaware of the existing parking facilities. At the same time the occupation of parking in the city centre was low. Therefore in 2009 and 2010 new signs to address the parking were installed on the main bicycle routes (see figure 2). Also a uniform style was designed so that the public parking places are better recognisable and more familiar. In 2010 and 2011 the uniform style was implemented.

To stimulate the use of bicycle parking in 2009 it was decided to make the usage more attractive through uniform and new rates. This meant that parking on the first day is free and the cyclist only has to pay €0.50 a day after an overnight.

Another planned measure was a campaign for bicycle parking. However at the same time an integrated mobility plan was developed. In this plan bicycle parking is integrated with mobility marketing. Therefore it was decided not to develop and start a long term communication campaign exclusively for bicycle parking. There were smaller specific promotional activities such as distribution of flyers drawing attention to parking facilities.

Figure 2 New signs pointing to bicycle parking places in the city centre



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Stage 5: Improvement of the usage, and levels of usage of the bicycle parking facilities (2009 - 2012) -

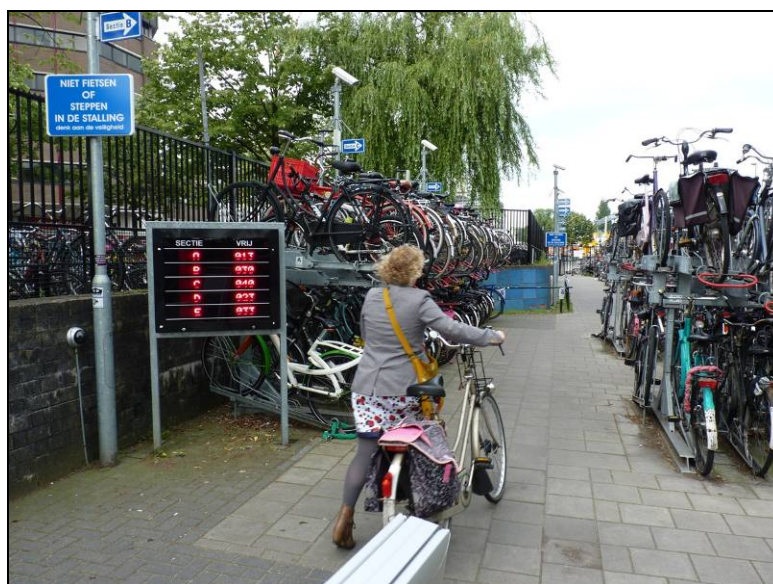
- a. Punishment of inappropriate parking, and parking for too long a period in the public space (longer than 28 days/ often abandoned bicycles);
- b. Automation of the bicycle parking facilities to detect availability of racks, and parking duration of bicycles.

From 2011 the removal of bicycles occupying racks for a very long time started. The municipality tested this earlier in the station area and it turned out that this resulted in a lot of free parking places. The enforcement consists of the removal of bicycles that are parked for more than 28 days. Most of the time they are left by their owner and no longer used (also called 'orphan' bikes). Bicycles that seem to be parked for a long time are labelled with stickers that warn the owner that the bicycles will be removed if it is still standing there after a certain time with the sticker on it. After a certain time all bicycles with labels are removed. At the end of 2011 and the beginning of 2012 two removal actions were carried out and 2,241 bicycles were removed. It proved that a lot of these bicycles weren't used anymore, as only 9 of the removed bicycles were picked up by their owners at the depot where the municipality stores the bicycles for another month. After a month these bicycles are forfeited and become property of the municipality. The municipality has a deal with one company that buys all these bicycles and recycles these into good second hand bicycles and offers them for sale in several shops in Utrecht and the surrounding area.

The 'orphan' bikes actions led to 431 free parking places, as not all removed bicycles were parked in a parking rack.

Another action was the removal of bicycles that are not parked in a parking facility and were parked in dangerous places in the public area. These bicycles were removed to a nearby guarded parking facility where they can be picked up free. In this way bicycle owners were forced to go to the parking facility, hopefully resulting in a change in behaviour.

Figure 3 Electronic parking system Smakkelaarsveld



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In November 2009, a large free guarded parking place near the station was opened (Smakkelaarsveld). Since 2011 this parking place has had an electronic system at the entrance that announces in which rows there are free places (see figure 3). The electronic system is being tested in this parking place. The purpose of this system is to make it easier to find an empty parking rack and to use all racks in the parking place and to detect bicycles that are parked too long (more than 14 days) in order to remove these and make space for other bicycles. If the test is a success more bicycle parking areas with this system will be provided in the city centre. As the test was delayed for 1.5 year (due to technical problems with the system) and the testing period will be longer than initially thought (2 instead of 1.5 years), the results will not be available before 2013.

B5 Inter-relationships with other measures

The measure is related to other measures as follows:

- **UTR 6.1 Public and Rental Bikes** – This measure is aimed at increasing the use of rental bikes among commuters and/or visitors to the city. The evolution of this measure 6.1 would have had a direct impact on the usage of bikes and the parking facilities in the centre. Since this measure was taken out of MIMOSA (amendment 2) there is no longer an inter-relationship to consider.

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C Impact Evaluation Findings

C1 Measurement methodology

This measure aimed at increasing the availability of bicycle parking facilities in the city centre and increasing the use of bicycles for trips of up to 7.5 km to and in the city centre; hence impacts on transportation will be taken into account.

It is expected that the execution of the present set of measures will not solve the full bicycle parking issue. In terms of timing, it is however expected that in the short and medium to long term it will lead to an improvement in the initial bicycle parking situation.

C1.1 Impacts and Indicators

Utrecht no.	Pointer no.	Category	Impact	Evaluation Indicator	Source
1		Transport	Parking space	Number of guarded parking places in the city centre	Counting, City of Utrecht, department of parking
2		Transport	Parking space	Number of portable guarded parking places for bicycles in the city centre	Counting, City of Utrecht, department of parking
3		Transport	Parking space	Number of public parking places in the public area in the city centre	Counting, City of Utrecht, department of parking
4	28	Transport	Modal split	Average modal split for trips by Utrecht residents to the city centre	Residents questionnaire, City of Utrecht, department of research and statistics

Detailed description of the indicator methodologies

To measure the availability of bicycle parking facilities in the city centre the following methodologies will be used:

1. **Number of guarded parking places** - The number of available guarded parking places for bicycles in the city centre is counted, to see if this number increases. These guarded parking places are:
 - Stadhuis
 - Singelborghstalling (before December 2009)
 - Wijk C/Lange Koestraat (below Van Haren: shoe shop with a bicycle cellar) (since April 2009)

The number of parking places was measured once a year in June: people counted the number of places. This indicator was followed yearly from June 2009 by the parking

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department of the city of Utrecht. For the baseline, reports from 2008 are used, however this counting was done in October and not in June.

Another free parking place is the previously mentioned Smakkelaarsveld. This parking place was implemented in April 2009. Smakkelaarsveld is not part of the action program and the CIVITAS measure, as it is located near the station and meant for public transport travellers. However it should be mentioned that an estimated 10% of the users are not public transport travellers, but visitors of the city centre. So these numbers are not included in this evaluation, but it does help to solve the city centre bicycle problem.

2. **Number of portable guarded parking places** - The number of available portable guarded parking places for bicycles in the city centre on Saturdays was counted. These portable guarded parking places are:
 - Mariaplaats (since September 2009)
 - Neude (since November 2011)
 - Janskerkhof (since November 2011)

The number of parking places was measured once a year in June (and in between in 2010 and 2011 to measure capacity to decide how many racks to place): people counted the number of places. This indicator was monitored by the parking department of the city of Utrecht from June 2009. For the baseline reports from 2008 are used, however this counting was done in October and not in June.

3. **Number of available parking places in public area** - The number of available parking places for bicycles in the public area in the city centre was counted, to see if this number increased. The number of parking places was measured once a year in June: people counted the number of places (and the number of placed bicycles). This indicator was monitored by the parking department of the city of Utrecht from June 2009. For the baseline reports from 2008 are used, however this counting was done in October and not in June.
4. **Average modal split** - The higher objective of this measure is to increase the use of bicycles for trips of up to 7.5 kilometres to and in the city centre. To measure this we use the percentage of residents of Utrecht that use the bicycle to go to the city centre. This modal split is measured by an annual questionnaire answered by residents of the city. This questionnaire contains a multiple choice question about how the resident mostly travels to the city centre.

Question:

'How do you usually travel to Utrecht city centre?' You may tick one answer: walking, by bike, by moped/scooter, by car, by bus, by tram, otherwise

'Hoe gaat u meestal naar het stadcentrum van Utrecht?' U mag een antwoord aankruizen: lopend, met de fiets, met de scooter/brommer, met de auto, met de bus, met de tram, anders

This annual survey is carried out in November each year. The modal split question is one of the questions in this larger long term survey with different questions about opinions and behaviour of Utrecht citizens. The average number of respondents is about 8,000 each year and the results of this survey are representative for the Utrecht population for age, gender, origin and income. The results are available for each of the 10 districts of the city and for the whole city. This indicator was monitored by the department of research (from October 2008

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onwards) which is responsible for the annual residents' survey of the city of Utrecht.

C1.2 Establishing a baseline

The action plan for bicycle parking started in 2009. For the guarded parking places we take the number of available parking places in October 2008 as a baseline. Baseline for portable guarded parking places is zero, as there were no portable parking places before 2009. For the number of racks (unguarded parking places in the public area) in the city centre we take the count in June 2009 as a baseline.

The objective is that at least 60% of all trips of up to 7.5 km are done by bicycle. The plan aims to increase the number of parking places for bicycles in the city centre by 3,500 to stimulate bicycle usage. The impact is measured by the number of extra parking places and the modal split, so the baseline is the number of parking places and modal split in 2008, before implementation of the extra parking places. As implementation of racks in the public area for the bicycle action plan only started in 2009, we take 2009 as the baseline.

C1.3 Building the business-as-usual scenario

The business-as-usual (BaU) scenario is the situation in which the action plan measures were not implemented, but other events like construction works and the closing of some parking places would have taken place. BaU for parking places can be found in the graphs and tables in section C2 of this report.

In the city centre there was already a shortage of places for parking bicycles. Because of the growth in the number of citizens due to the building of Leidsche Rijn (90,000 newcomers) and the redevelopment of the station area, this shortage will grow. The business-as-usual (BaU) situation would be no implementation of extra and portable parking places. As the closure of one parking place was already foreseen (Singelborghstalling), this means that BaU is 520 guarded parking places less than the number in 2008. For non-guarded parking places in the public area, this means no implementation of 438 extra racks.

A decrease in parking places will have an influence on the number of bicycles in the city centre and on the overall goal, the final percentage of bicycle use for travel to the city centre. However it is not known how this will be influenced. The following assumption was made: increasing parking places has a positive effect on bicycle usage and so in increasing the modal split towards cycling. No extra parking space or a decrease results in no change in modal split. This is a positive prediction as a decrease in the modal split towards cycling will be more obvious; not only is parking space not increasing, it is decreasing and the number of cyclists is expected to grow at the same time, so shortage in parking space will also grow.

C2 Measure results

The results are presented under sub headings corresponding to the areas used for indicators – economy, energy, environment, society and transport.

For each indicator the results are briefly described and for total impact several indicators are included to understand the total impact of guarded bicycle parking places. The results are reported for the total CIVITAS MIMOSA period, in the annex results per year can be found.

C2.1 Economy

Not applicable

<i>Measure title:</i>	Parking facilities for bicycles				
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C2.2 Energy

Not applicable

C2.3 Environment

Not applicable

C2.4 Transport

Number of guarded paid parking places

The number of available guarded parking places (paid and non-paid) for bicycles in the city centre is counted for the following locations:

- Stadhuisstalling: 370 parking places
- Singelborghstalling (before December 2009): 520 parking places
- Wijk C/Lange Koestraat (below Van Haren: shoe shop with a bicycle cellar) (since April 2009): 150 parking places

In 2008 the number of guarded paid parking places in the city centre was 890 in total. In April 2009, a new parking place was opened to obtain more parking places as replacement for future decreases due to construction works. In December 2009 one of the parking places was closed (Singelborghstalling) as planned as this was implemented temporarily to replace another closed parking area. Only 520 guarded parking places were left in the city centre. In 2009 it was decided to make tariffs uniform at municipal parking places, which meant the first day became free of charge. So Stadhuisstalling became free of charge, Wijk C/Lange Koestraat was already free of charge.

Number of portable guarded parking places

The number of available portable guarded parking places for bicycles in the city centre on Saturdays was counted. These portable guarded parking places are:

- Mariaplaats (since September 2009): 100- 200 places
- Neude (since November 2011): 100, 150-200 places
- Janskerkhof (since November 2011): 100-200 places

The portable parking places are easily changed from 100 to a maximum of 200 parking places each. As it is frequently used, it was decided to enlarge the Neude parking place regular from 100 to 150 places in 2012. For the other portable parks an assumed 100 parking places were used for the impact evaluation. This means impact evaluation gives the minimum impact achieved.

Figure 4 shows the impact of the measures on guarded bicycle parking places per year. In the first year the number of places decreased as a result of the closing of one parking place due to construction works. In the following years the measures resulted in an increase in guarded parking places (the opening of Wijk C/Lange Koestraat and implementation of portable parking places). At the end of the CIVITAS MIMOSA period there was almost no loss of parking places.

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Figure 4 Development of guarded parking places in the city centre 2008-2012

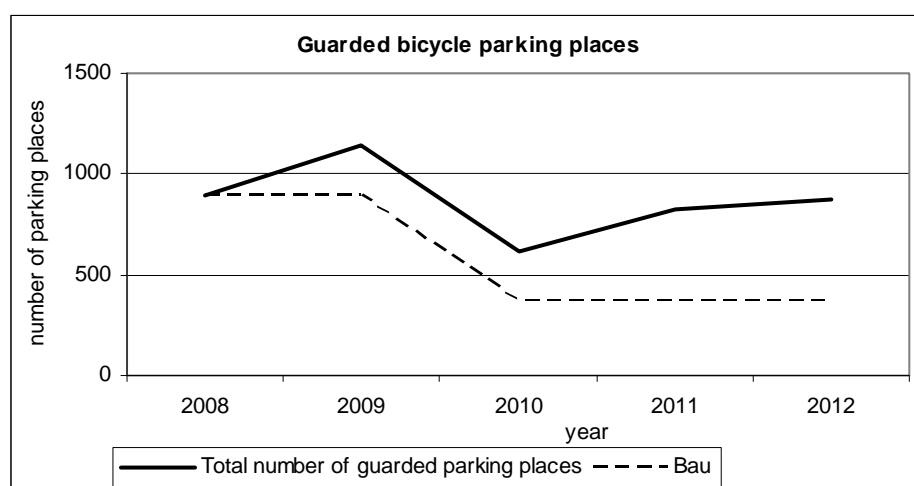


Table 6 shows the results for each kind of guarded parking place. It shows that the number of paid parking places decreased and the number of non-paid parking places has grown. At the end of CIVITAS MIMOSA the result was a decrease of 20 bicycle parking places in the city centre. However if the measures were not implemented the decrease would have been 520 parking places. So this measure has prevented a decrease of 500 parking places.

Table 6. Total impact on guarded bicycle parking places measures UTR 6.4

Utrecht no.	Pointer no.	Indicator	Baseline*	BaU	After	Difference After - BaU	%
1		Number of guarded paid parking places for bicycles in the city centre	890	-520	-370	+150	
2		The number of portable guarded parking places for bicycles in the city centre on Saturdays	0	0	350	+350	
		Total number of guarded parking places	890	-520	-20	+500	+96%

Source: Effect report Civitas Mimosa, Action plan parking facilities for bicycles, City of Utrecht, team Environment & mobility (2012)

* Oct 2008, two storages Singelborghstalling and Stadhuisstalling

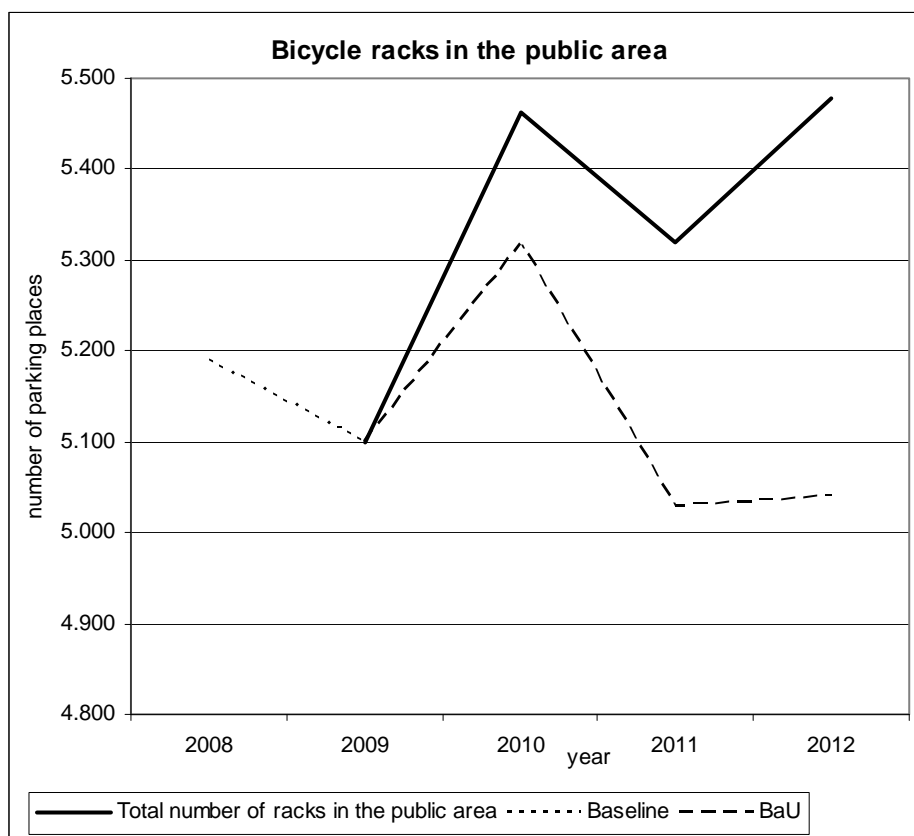
Number of available parking places in public area

The number of available parking places for bicycles in the public area in the city centre was counted.

Figure 5 shows the development of parking places in the public area per year. Placement of new racks and changing of old racks as part of the CIVITAS MIMOSA measure only started in 2009, so 2009 is the baseline. The number of racks varies according to implementation and the removal of racks due to the redesign of areas.

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Figure 5 Development of bicycle racks in the public area in the city centre 2008-2012



The results and impact of the measures on bicycle parking space in the public area are reported in table 7. During CIVITAS MIMOSA the number of parking racks in the public area has increased by 438. This is an increase of 10% compared to the situation without the measures (business-as-usual).

Table 7. Total impact on bicycle parking racks in the public area UTR 6.4

Utrecht no.	Pointer no.	Indicator	Baseline *	BaU	After	Difference After - BaU	%
3		The number of parking places for bicycles in the public area in the city centre	5099	5040	5478	438	+9%

Source: Effect report Civitas Mimosa, Action plan parking facilities for bicycles, City of Utrecht, team Environment & mobility (2012)

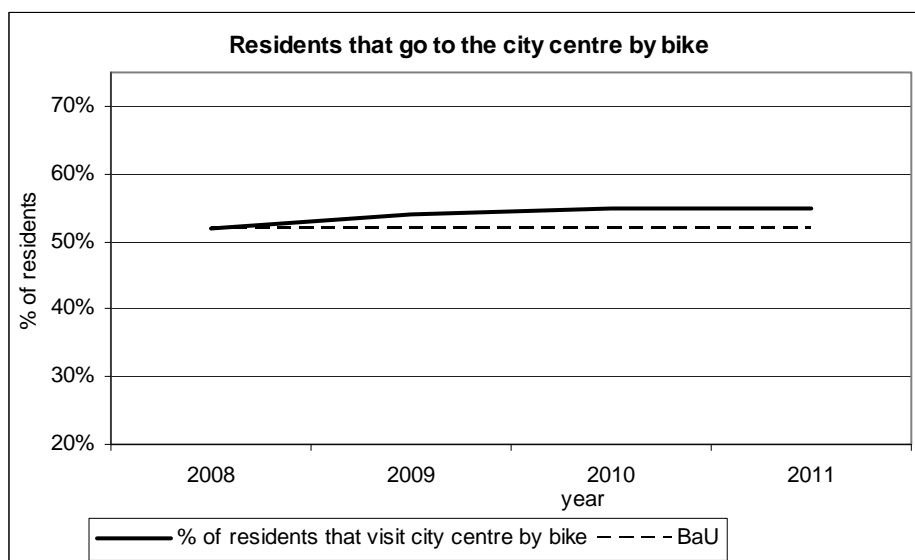
* June 2009

Average modal split

The higher objective of this measure is to increase the use of bicycles for trips of up to 7.5 kilometres to and in the city centre. To measure this, the percentage of residents of Utrecht that cycle to the city centre was used. This modal split is measured by an annual survey completed by residents of the city.

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Figure 6 Average modal split: bicycle use among residents for visiting city centre



The percentage of residents that cycle to the city centre did grow a little (see figure 6). For the business-as-usual it is assumed that this percentage would have stayed the same as in 2008 (51%). With the measures this percentage in 2012 is 55%. This is a significant increase of 4% and compared to the BaU modal share of cyclists increased by 10% (see table 8).

It is difficult to say how much this increase in bicycle usage in the city depends on the increase in bicycle parking places, especially given the fact that the increase in parking places was limited. However it is likely that the increase in parking places made a positive contribution.

Table 8. Total impact on guarded bicycle parking places measures UTR 6.4

Utrecht no.	Pointer no.	Indicator	Baseline	BaU	After	Difference After - BaU	%
4	28	The percentage of residents of Utrecht that cycle to the city centre	51%	51%	55%	+4%	+8%

Source: City of Utrecht, department of research, Residents survey each year in November, representative population for the city of Utrecht, 2008 N=8870, 2009 N=8420, 2010 N=6932, 2011 N= 6866

C2.5 Society

Not applicable

C3 Achievement of quantifiable targets and objectives

No.	Target	Rating
1	Additional 2,950 guarded bicycle parking places in the city centre	0
2	Additional 435 free bicycle parking places in the public area of the city centre	**
3	At least 60% of all short trips of up to 7.5 km to the city centre will be by bicycle.	*
NA = Not Assessed 0 = Not Achieved * = Substantially achieved (at least 50%) ** = Achieved in full *** = Exceeded		

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The additional number of guarded parking places was a lot less than planned. This was due to the cancellation of the guarded parking facility at Janskerkhof planned together with the University of Utrecht (1,400 places) and the delayed implementation of the Vredenburgstalling caused by delayed construction works. This last one is already built but not finished yet, and will open in 2013.

The proposed additional free parking places in the public area have yet to be fully implemented; here it turned out to be expensive and inefficient to change all the existing parking racks for more efficient ones at once. It was decided to change them when redesign of the area takes place. As this measure continues in the coming year, extra parking places are expected.

Not 60% but 55% of the residents are travelling by bike to the city centre. This is less than aimed for, however the modal share for cycling in Utrecht was already high and increased. This means that increase becomes more difficult as it is probably necessary to get frequent car users or public transport users to cycle. Maybe we aimed too high with this target. However with this measure a growing shortage was prevented. The implementation of additional bicycle parking places continues to solve the existing shortage and this will probably have a positive contribution in stimulating further bicycle use.

C4 Up-scaling of results

Utrecht is the first city in the Netherlands that has implemented portable parking places and the results are very promising. The portable parking places concept is easy to implement, only a trailer with special racks is necessary and a good location. Portable parking places could be implemented in other places or at other times in the city of Utrecht. Other cities can also easily adopt the system. There are already two other cities in the Netherlands that have purchased a portable parking system: Helmond and Enschede. The city of Hilversum is considering portable parking and visited Utrecht to gather more information on the system.

C5 Appraisal of evaluation approach

Counting the number of parking places and measuring the modal split of Utrecht residents gave a good impression of the impact of the different actions in this measure and the impact on the city.

However the link between the modal split (bicycle usage) and the availability of parking places is difficult to make. It is clear (also from other research) that safe parking for bicycles (to prevent stealing) is a precondition. The extent to which the availability of parking places influences modal split is unclear.

For this evaluation the number of parking places was measured, but the total number of parked bicycles and the number of bicycles parked on the street was not included. From other measurements and reports there are indications that the number of parked bicycles relative to the number of available racks in the public area hasn't changed much in the last few years (2009-2012). For future evaluations this indicator is included.

Before conducting the evaluation one other indicator was included: the number of parking places for carrier bikes in the city centre. This indicator was left out as in the final action plan special parking places for carrier bikes were no longer specified. Special places for carrier bikes are provided by making space without racks free where carrier bikes and other bikes can park. This space is not measured separately and these places are excluded from the parking place numbers. Reported capacity of most parking places is in reality larger because of this.

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Another change was that at the beginning paid and non-paid guarded parking places were different indicators. As in 2009 it was decided that all guarded parking places should be free of charge for the first day of parking, all the paid guarded parking places became free guarded parking places without adding new parking places. For the evaluation it was decided to make one indicator of guarded parking places (with both paid and non-paid) as this is less confusing and is a good measure of the extra number of parking places. However it should be mentioned that changing paid parking places to non-paid makes these existing parking places available for more people (as you don't need to have the money for it) and also contributes to the objective in this way.

C6 Summary of evaluation results

The key results are as follows:

- **Prevented decrease in available guarded parking space-** The measure didn't add extra guarded parking places compared to the initial situation but prevented a decrease of 500 parking places.
- **Extra parking places in public area-** The measure added 438 extra parking places in the public area. This is an increase of 9% compared to business-as-usual.
- **Growth of bicycle use-** During the CIVITAS MIMOSA period the percentage of Utrecht residents that usually cycle to the city centre grew by 4% from 51% to 55%.

The final contribution of the implemented measures to the wider envisaged change of the modal split of cycling in Utrecht remains unknown at this stage, the Action Plan is still running for another year and other stimulation programmes have also yet to finish.

C7 Future activities relating to the measure

Although the CIVITAS MIMOSA period ends, the Utrecht city bicycle parking action plan is continuing in 2013.

At least one guarded parking facility will be opened in 2013 (Vredenburg) and measures to change existing racks into more efficient ones will continue. Also the portable parking places will stay in use and standard capacity in all three locations will be increased.

Besides this the shortage of bicycle parking places in Utrecht is now securely within the public interest and will likely remain there in the future and therefore the activities of this measure will also remain topical.

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D Process Evaluation Findings

D.1 Deviations from the original plan

The deviations from the original plan comprised:

- No special parking places for carrier bikes** – At the start of the measure it was foreseen to test special parking places for carrier bikes and other bikes that don't fit within the existing parking racks. This part of the measure has been changed as it appeared difficult to state exactly which bicycles were supposed to park in these 'reserved places'. It was also impossible to enforce these exclusive places, as it was expected that these places would be used for parking regular bicycles when there would be no continuous enforcement of removing bicycles which were in violation. As a deviation from the plan, parking places for carrier bicycles and other bicycles that wouldn't fit in a regular bicycle rack were created in two public bicycle parking places where staff were around to keep an eye on the use of these places. A new project was also started in September 2012 in which bicycle parking spaces without racks were created in several locations within the city centre. These parking spaces could be used by any kind of bicycle (not exclusively for carrier bicycles) but are of course very useful for parking carrier bicycles.
- No reducing costs of management via automation of bicycle parking** – Costs of guarding a bicycle park by staff are considerably high. The idea was to reduce these costs via automation of bicycle parking places, so less staff would be needed and guarding the bicycle parking place could be done remotely (via cameras and a control room). Automation of the bicycle parking could also be advantageous for cyclists, as the costs for parking a bicycle could be lowered and parking places could be open 24/7. However, on second thoughts, the existing bicycle parking places in the city centre were considered not large enough to integrate an automated access control system. The experiences with automated systems (the national railway company did test several of these systems at their own bicycle parking places) also showed that these systems were not more economical in comparison with staffed bicycle parking places and cyclist preferred a guarded bicycle parking place with staff (more service, sense of security etc.). The city of Utrecht therefore started a pilot (with the national railway company) to partly automate the bicycle parking places. An automated detection system was introduced in a bicycle parking place near the city centre (Smakkelaarsveld) which was used to inform cyclist where empty bicycle racks could be found.
- No implementation of a guarded bicycle parking place at Janskerkhof** – A new, underground bicycle parking place was to be built in cooperation with the University of Utrecht. This new bicycle parking place should have facilitated both students visiting the university as well as cyclists visiting town. However, the collaboration between the university and the city of Utrecht was discontinued. The bicycle parking place was built, but only to facilitate the students. It can not be used by other cyclists. This parking place was opened in August 2012. The city of Utrecht started a feasibility study on their own to build a public underground bicycle parking place nearby (at Neude). This study is still in progress (archaeological research will be carried out starting October 2012).

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- **More portable bicycle parking** – A pilot with portable bicycle parking was executed to see if 'bringing bicycle racks to the cyclist' would make a difference in closing the gap between supply and demand for bicycle racks. The pilot was a success. The city of Utrecht decided, after conducting a feasibility study, that the concept of portable bicycle parking should be expanded over more than one location in the city, as was initially planned. In October 2012, three portable bicycle parking locations were in operation instead of two.

D.2 Barriers and drivers

In this chapter barriers and drivers are described for each measure phase (between brackets the barrier/driver field number as described in the process evaluation guideline).

D.2.1 Barriers

Preparation phase

- **Political (1): Consideration focusing on long or short term solutions** – The city board of Utrecht was at first focusing on changing the policy on bicycle parking by creating a new policy paper. However, as a new alderman was installed, the focus on bicycle parking changed from long term solutions to short term solutions. This new alderman wanted to see results on the streets 'right now' and therefore decided that a compact 'action plan for bicycle parking' had to be set up, in order to make it possible to work on short term solutions for bicycle parking problems, instead of following a long administrative procedure to put together a new policy paper. Therefore the change had to be made from policy paper to action plan.

Implementation phase

- **Involvement/communication (5): Some opposition from residents and entrepreneurs** – There was some opposition from residents and entrepreneurs against the location of portable parking facilities and bicycle racks, as they preferred alternative ways of arranging public space or didn't want to have bicycle racks in front of their house/shop.

Operation phase

- **Positional (6): Struggle for available space** – It appeared difficult to find enough and suitable places in the city centre to set up portable bicycle parking. We had to agree on the fact that portable bicycle parking could not always be set up at the desired place, as the public space was needed for other purposes (mainly events) which the city board gave priority to.

D.2.2 Drivers

Overall drivers

- **Problem related (4): Urgency of parking problems** - Bicycle parking is an urgent issue in Utrecht, due to the general lack of enough and well-placed bicycle parking space, this makes it easier to have the measure implemented as it can solve this urgent situation.

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- **Positional (6): Bicycle parking in Council program-** In the new council program there is a lot of focus on the stimulation of bicycle use and therefore also bicycle parking. This has a positive effect on decision making processes linked to measure implementation.

Preparation phase

- **Problem related (4): Increasing parking problems-** Because of the increasing problems with bicycle parking in the city centre, some of the projects had already started up while awaiting Council approval.

Implementation/Operation phase

- **Other (12): Success of portable parking facilities** – As portable bicycle parking seemed very successful (lots of people using it, good reviews, parking problems decreased around the portable bicycle parking locations), extra portable bicycle parking locations were put in operation.

D.2.3 Activities

Preparation phase

- **Planning (7): Earlier parking actions** – In 2008 the first action had already been taken: an extra bicycle parking facility had already opened; a first portable parking facility for bicycles was opened and on Saturday all guarded bicycle parking facilities were made free of charge. Finally, there is stricter enforcement of bike parking regulations during week days.
- **Involvement/communication (5): Citizen competition for innovative ideas** - A competition amongst citizens was organised to generate innovative ideas about bicycle parking (190 contributions). The aim was to raise support among citizens for bicycle parking.

Implementation phase

- **Involvement/communication (5): More consideration with stakeholders-** There has been extra consideration in decision making within the municipality in which both the urgency of (mobile) parking space for bicycles and the wishes of residents and local entrepreneurs are weighted and thought-out decisions have been made from situation to situation.
- **Cultural (3): Flexible implementation-** We have been flexible towards residents and entrepreneurs when necessary by erecting smaller portable bicycle parking places or none during events in the planned locations.

D.3 Participation

D.3.1. Measure Partners

- **City of Utrecht** – Mobility Program (Programma Bereikbaarheid), responsible for action plan and implementation of the measure.
- **City of Utrecht** – Department of parking, responsible for implementation of some of the measures.

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D.3.2 Stakeholders

- **Cyclists-** Residents and visitors of the Utrecht city centre who come by bike. They need space to park their bicycles and need to be persuaded to use a rack or guarded parking.
- **Residents** – Residents living in the city centre are confronted with new bicycle parking places, as a solution to the nuisance of bicycles on the streets and pavements but also as usage of public space that they could use for instance to sit outside or just open space that they liked.
- **Entrepreneurs** – Entrepreneurs in the city centre both benefit and suffer from extra parking space for bicycles resulting in less bicycles parked outside racks making public space neater, while on the other hand they sometimes they have to deal with new racks or parking places in front of their terrace or shop.

D.4 Recommendations

D.4.1 Recommendations: measure replication

The bicycle parking facilities measure is especially interesting for cities where bicycle traffic and parking exceeds the available bicycle parking space. This measure gives opportunities to make bicycle parking more efficient by changing existing racks or flexible when using mobile parking racks. For mobile parking it is necessary to achieve mobile parking racks.

For success the following is recommended when implementing this measure:

- **Giving priority to bicycle parking in relation to car parking** – Although the city board and city council are unanimous in their way of thinking that more (and better) bicycle racks and parkings should be provided, no priority is given in relation to car parking. This makes it sometimes extremely difficult to find appropriate space to expand bicycle racks and/or – facilities, as it is not allowed in the city centre to transform parking places for cars into places where bicycles could be parked. It is recommended that cities who try to expand bicycle racks in the city centre try to make a connection in their program between car parking and bicycle parking. This will make it easier/possible to expand the number of bicycle racks in the city centre and at the same time reduce the number of parking places for cars, stimulating car users to change modality.
- **'Protect' bicycle racks** – Although there are strict regulations and rules about adding and removing parking lots for cars, there is no such thing set up for bicycle racks (yet). These are considered 'street furniture' and can be removed for any reason, without any conditions being attached. It appeared for instance that several brand new bicycle racks were removed due to the fact that an entrepreneur wanted an outdoor terrace for his customers near his café, exactly at the location where the bicycle racks were placed. This application for an outdoor terrace was granted by the city council, as it could not reject it due to the fact that it had no regulations to fall back on to 'protect the bicycle racks'. It is recommended that regulations and rules for adding and removing bicycle racks are set up prior to implementing a bicycle parking program.

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D.4.2 Recommendations: process (related to barrier-, driver- and action fields)

- **Integrated action plan** – Make an integrated action plan with different ways to achieve more available bicycle parking places. An integrated plan which has political approval makes actions easier.
- **Include residents and entrepreneurs-** Include residents and entrepreneurs at potential bicycle parking locations early in the process and consider their objections, as these can delay or stop the implementation.

E References

- 'More cycling? Effects of government measures', Netherlands institute for Transport Policy Analysis/ Kennisinstituut voor mobiliteitsbeleid, Den Haag, 2007, www.kimnet.nl
- Effectrapportage Actieprogramma fietsparkeren binnenstad, periode 2009-2012 (Effect report Civitas Mimosa, Action plan parking facilities for bicycles), City of Utrecht, Department of parking, team environment and mobility.

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Annex UTR MRT 6.4 Parking facilities for bicycles

Results impact evaluation per year

	2008	2009	2010	2011	2012	growth
Mariaplaats	0	100	100	100	100	100
Neude				100	150	150
Janskerkhof				100	100	100
Results	0	100	100	300	350	350
Baseline	0					
BaU	0	0	0	0	0	0

Source: Fietsparkeeronderzoek Utrecht

	2008*	2009	2010	2011	2012	growth
Number of racks city centre	5.189	5099	5317	5028	5040	-149
new extra places	0	0	146	292	438	438
Results	5.189	5099	5463	5320	5478	289
Baseline	5.189					
BaU	5.189	5099	5317	5028	5040	-149

*baseline measurement Oct. 2008 city centre
Source: Fietsparkeeronderzoek Utrecht

	2008*	2009	2010	2011	2012	growth
Number of bicycles (parked in and outside racks)	3.800	5116	5816	5106	5464	1.664

*baseline measurement Oct. 2008 city centre
Source: Fietsparkeeronderzoek Utrecht

	2008	2009	2010	2011	2008-2011
Walking	11%	12%	11%	11%	0
Bicycle	51%	54%	55%	55%	4
Moped/scooter	1%	1%	1%	1%	0
Car	9%	9%	9%	8%	-1
Public transport (Bus/tram/train)	25%	24%	24%	24%	-1
otherwise	2%	1%	1%	1%	-1

Source: City of Utrecht, department of research, Residents survey each year in November, representative population for the city of Utrecht, 2008 N=8870, 2009 N=8420, 2010 N=6932, 2011 N= 6866

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Table: Average modal split: 'How do you usually go to the city centre of Utrecht?'

% of residents that visit city centre by bike	51%	54%	55%	55%	
BaU	51%	51%	51%	51%	

Source: City of Utrecht, department of research, Residents survey each year in November, representative population for the city of Utrecht, 2008 N=8870, 2009 N=8420, 2010 N=6932, 2011 N= 6866